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ComputerWeekly

Thursday, September 29, 1983

PT7 cuts costs

FERRANTI
Computer Systems

Acorn and Logica to go public

by John Kavanagh

FAST growth by microcomputer manufacturer Acorn Computer and consultancy Logica is taking these UK firms into Stock Exchange listings to raise cash.

BBC computer sales have pushed Acorn's profits from £300,000 to £8.3 million this year, while turnover reached £42 million. Production of the £199 Electron home computer is to be doubled. Some 100,000 machines will be made by AB Electronics – and that will create 100 jobs at the company's factory in Wales.

Acorn hopes to raise £10 million by offering 10% of its equity on the Unlisted Securities Market, a cheaper and less demanding way of getting into the Stock Exchange than going for a full listing.

Co-founders Chris Curry and Hermann Hauser say they must continue to come up with new ideas to keep their market position. Plans include a link to enable the computer to control household lighting, plus an adapter to allow an Electron to connect through a telephone to the telex network.

Meanwhile Logica managing director Len Taylor revealed the company's plans for a full Stock Exchange listing when he announced results showing 27% growth to £42.2 million for the year ending June 30. Pre-tax profit was up 55% at £3.35 million.

Logica is putting about 30% of its shares on the market in two months' time. A third will be new shares to bring money into the company. The 220 staff shareholders will see their ownership of the company drop from 55% to below 50%.

The other shareholders are investment institutions such as pension funds.

"We've grown very rapidly in the last two years and need cash for working capital, expansion and capital investment," Taylor said. "We need a big investment in computer equipment to back our work on products and systems."

Taylor said Logica had some takeover opportunities, especially in the US. The company took over US banking systems specialist Freyburg Systems Associates two years ago, a move which tripled Logica's size in the US and pushed it into the banking market in a big way. The US now accounts for 14% of its business – and banking represents 22%.

But Taylor added: "Acquisitions are not top priority. Our growth so far has been of our own making rather than through takeovers."

All the same, he said the Stock Exchange listing would be useful because the shares could be used to pay for acquisitions.

The listing would also give Logica more status in the computing market, he said.

During the last year Logica has set up a subsidiary in Darmstadt, West Germany, home of the European Space Agency, one of the company's customers. And it is soon to open a Far East operation in Hong Kong with Jardine Matheson, the colony's biggest public company. Meanwhile Logica has become the third biggest computing services company in Australia after buying the subsidiary of Planning Research Corporation there. Overseas business accounts for 48% of turnover.

Taylor said there were no plans to move further into manufacture. Sales of the 2200 word processor through ICL were going extremely well, he said.

Logica's share placing is being handled by merchant bank Close Brothers and underwriter Hoare Govett. The shares will be offered for sale by tender, which means a minimum price will be set and buyers can bid at that or a higher price.

TAYLOR . . . "We've grown rapidly in the last two years".

ICL in head-on clash with its Cadcentre

ICL is going into direct competition with its Cadcentre subsidiary in a move which also pits its Perq personal computer head-on against the Apollo Domain.

In the last week ICL has unveiled the Perq 2 replacement for the original Perq and signed a £1 million three-year agreement to sell Cadcentre's Diad draughting package and GNC numerical control programming system on the new machine.

But next week Cadcentre will announce its first move into hardware sales with a package including the Apollo Domain – running Diad and GNC. The Apollo machine will also be used to spearhead Cadcentre's attack on the US. And Apollo itself will unveil some "very very significant additions" to its range next week.

Cadcentre is partly owned by ICL, which this year led a three-firm consortium in a £1 million takeover.

The new Perq has up to two megabytes of main memory, compared with one megabyte on the Perq 1, while control program memory, which can be written to by users, is quadrupled to 16K. Other enhancements include a 35 megabyte eight-inch Winchester disc. Prices start at just under £20,000, the same as Perq 1.

The launch sees ICL becoming one of the first of the 20 companies supporting the international local area network standard to introduce a product following the standard. In June last year the firms, including big names like Digital Equipment and Hewlett-Packard, committed themselves to support the European Computer Manufacturers Association standard.

The Perq 2 announcement confirms PNX, ICL's version of the standard Unix operating system, as the Perq's main ... Initially PNX supports links between Perqs over a net... systems local area network... ning under the ECMA standard. Later releases will support ... resources such as disc file... printers.

The network runs at 10 megabits a second. Previously ... were linked only by ... Ethernet networks.

Apollo said the news could bring Perq more into competition with Domain. "From ... record with PNX so far, ... lieve the networking ... it," said Apollo UK ... manager, John Parkinson, referring to the delays ... suffered in bringing PNX ... ket.

Parkinson added: "Net... has always been the whole ... the Domain. You can't ... multi-user DEC Vax and ... minicomputers with ... workstations. We emphasise ... works, with shared files ... on."

ICL has sold about 500 Perqs but that includes 100 ... Three Rivers, the US firm ... developed the machine ... Perq 2, has sold another ... Apollo has sold about 1,000 ... ntains.

Both sides say the market ... take off in the next two years.

Data Logic to take on 225 staff

by Caroline Burgess

UK-BASED systems house, Data Logic, is to hire 225 extra staff, most of them programmers and analysts.

The bulk, 140, of the staff will be hired as soon as possible, and the other 85 vacancies will occur by the end of next year.

A Data Logic spokesman said the jobs were the result of increased sales in all areas. "We have suffered from decreased orders but now they are increasing. There has been a definite upturn in business."

Most of the vacancies are for computer programmers and analysts but also include engineers and sales staff. These are in addition to the company's regular intake of 15 graduates a year. At present Data Logic employs about 700 staff.

Data Logic last April bought Altergo Business Systems from the receivership and took on 135 staff.

Other software houses which have recently recruited staff include Logica which in August hired 125 graduates. It expects to take on a total of 250 new staff annually. Scicon expects its recruitment to continue at between 120 and 140 a year.

NEWELL . . . . Drive to recruit small services firms.

CSA first lady

by John Kavanagh

F INTERNATIONAL managing director Alison Newell is set to become the Computing Services Association's first woman president today (Thursday). She has been vice-president to Peter Thomas of Pactel for the last year and the annual meeting is expected to vote her into the top CSA post.

Newell said that if elected she would press on hard with the campaign to recruit small services firms as associate members, a scheme introduced this year. This was for those companies' own benefit: they would not have to meet the "very stringent" entry conditions but they could take advantage of CSA information services, meetings and seminars. Once they had proved they could survive they could apply for full membership, she said.

Newell said the CSA should also continue to stress its own role as the trade association of a maturing industry. It would push for more recognition of itself and its members in the business world.

She added that there was a good feeling of optimism among services firms.

■ Services industry booming: page 5.

Profit slump hits Apple share price

by John Riley

APPLE Computer shares took a sharp tumble on the New York stock exchange last Friday following the news that the fourth quarter figures out tomorrow will show a slump in profits.

The price dropped from $33 to $23⅞ before recovering by Monday to $25⅜, compared with a peak of $62¾ just three months ago.

The wave of selling was sparked off by information from John Sculley, Apple president, that profits for the third quarter would be at least $10 million below the $18 million gained in the respective quarter last year.

The announcement was made in advance of the results, "because we considered it good industrial relations to give people an advance warning. What analysts don't like is a surprise," said a company spokesman in Apple's Californian headquarters.

The fall in profits is widely attributed to competition from IBM's Personal Computer. The spokesman said that European figures as a whole were slightly below target.

Peter Cobb, managing director of Apple in the UK, did not think the IBM PC such a serious threat. "People who bought IBM PCs would have bought them anyway as many have pre-programmed IBM accounts."

Cobb says UK figures were expected and that he was experiencing "steady growth – selling a greater proportion to the business community than in the US."

Cobb said all Apple products were selling well.

That was not the case in the US, according to the spokesman there. He said that although the Apple III was holding its own, sales of the Apple II were flat, while Lisa sales were "slightly lower" than forecast.

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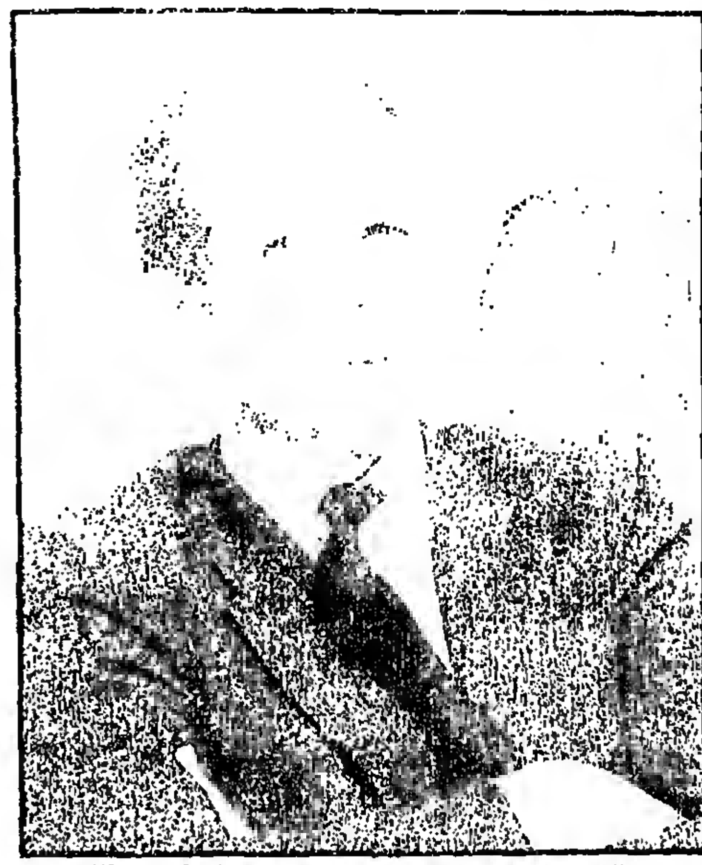

OAKLEY . . . "Institutions want a good place to put their money."

Oakley backs bank backing scheme

A SCHEME for merchant banks to back small companies who want to take part in the Alvey Programme is being pushed by Brian Oakley, the programme's chairman.

Oakley, who spoke at the Computing Services Association quarterly luncheon last week, once more addressed the problem that the government's 50% limit on Alvey funding could pose for the small company.

He said that City institutions were looking for a good place to put their money. The Alvey directorate hopes to establish a scheme for firms unable to raise the 50% necessary to participate in Alvey projects, and which the Alvey Directorate believe ought to be in the programme. In such a case some kind of outside City backing would be arranged.

Oakley was cautious not to make any firm commitment to the scheme: "I believe we will be able to work it out, but I am not sure – I hope to *announce* something soon."

The 50% funding limit is a real problem, Oakley said, since some of the very best of British talent is in small firms.

But he also sees some positive advantage in the limit: "I have seen some firms grow fat on 100% funding," he said, particularly in defence.

But he stressed that if he has a "water tight case" that the limit is impeding the programme, he has the option to go back to the Cabinet and ask for a change in policy.

The problem of the 50% limit on funding was brought home by Jim Feeney, managing director of Imperial Software Ltd.

Feeney asked why small UK software companies should get involved in the Alvey Programme, when they were able to get 100% funding from other sources.

Feeney said Imperial Software, which was only founded a year ago, was being backed with 100% funding on projects backed by US government departments and by the European Commission.

Oakley said the UK software industry must achieve a recognition similar to that of Rolls Royce – a worldwide recognition for *its* excellence and productivity.

The Alvey Programme gives the industry some chance to achieve that goal.

But he added that a considerable amount of software in this country could be better written.

Europe plans harmonious telecomms

by John Riley and Donald Kennett

A MAJOR new European initiative to achieve a common telecommunications policy got off the ground last week when the Council of Ministers agreed to a six point plan drawn up by the European Commission.

The plan, to combat the growing divergence and uncertainty of telecommunications development in the Community and the fragmentation of its markets, proposes:

- co-ordinated medium and long term planning;
- common R & D programmes, especially in user interfaces, opto-electronics and local broadband networks;
- agreement on interface standards;
- joint development of transnational communications links;
- development of the telecommunication infrastructures of poorer EEC countries; and
- opening up of those parts of the communications equipment market dominated by public procurement to combat entrenched national interests.

The European telecommunications industry, which is still mainly oriented towards telephone communication, is increasingly moving towards digitisation to carry data communications.

The need for co-operation has been pressing for some time. "The lack of market transparency at Community level threatens the competitivity of the European telematics industry, which is confronted with mounting pressure from the US and Japan," says the Commission.

Now that the Council of Ministers has given its approval, a more detailed programme will be drawn up by the Commission, and financing arrangements for the whole package will be discussed at the Heads of State meeting in Athens in December.

Advanced telecommunications facilities are seen as essential to exploiting the devices and services to be developed under the European Esprit R & D programme and under national schemes such as the Alvey programme.

Implementation of harmonised telecommunications facilities is expected to increase the multiplier effect on their benefits for industrial and commercial efficiency, and to enlarge the overall market.

Special advisor on telecommunications to the European Commission and former British Telecom managing director Peter Benton said: "Information technology doesn't use up scarce resources and the growth it generates is unlikely to be affected by the constraints experienced in the manufacturing revolution."

The Commission is aware that, on the record of efforts with X25 packet switching, which is believed to have been implemented in 25 different versions, and of the two year wait for teletex, it will take a major political effort to achieve harmony and rapid progress in the more complex area of the ISDN (Integrated Services Digital Network).

The Commission, in its report to the Council, hit out at the insufficient investment caused by the fragmentation of the telecommunications market; the development and use of nine different public switching systems (compared with three in Japan and four in the US); divergence of narrow and wide band integrated services; and a situation where European companies are co-operating more with the US and Japan than with each other.

Telecommunications authorities are believed to be poorly motivated to get advanced networks operating quickly. They use "cost-plus" pricing policies that hide the market value of their services from them, operate on a public service philosophy rather than as leading edge industries, and are run as bureaucracies.

BENTON . . . "IT doesn't use scarce resources."

BT goes US for directory enquiries

BRITISH TELECOM has gone to the US for its long awaited computerised directory enquiries system. Standard Telephone & Cables of London will supply the system developed by Computer Consoles of New York in a joint contract worth $54 million.

The system will comprise 4,000 workstations with access to a total UK database of 22 million directory entries, making it the largest computer-based listing of telephone numbers in the world. Originally ICL had been tipped to win the contract with its Content Addressable File Store (CAFS).

Grundy bidders

TWO firms in continental Europe are leading the bidders for UK microcomputer manufacturer Grundy Business Systems. Liquidator Tim Harris of Deloitte Haskins and Sells, has sent draft takeover contracts to the companies and hopes for a reply this week.

HP ups its stake

HEWLETT-PACKARD is to increase its stake in Yokogawa-Hewlett-Packard, its joint venture with the Japanese instrumentation manufacturer, Yokogawa-Hokushin Electric, from 49% to 75%, through a new share issue. YHP, based in Japan, employs 2,000 and had sales of Y250 million in 1982 manufacturing instruments, computers and peripherals as a licensee of HP.

Motorola spends

MOTOROLA is to spend at least £30 million over the next three to five years to market its data processing and office automation products directly in Europe. The company's Information Systems Group expects to take on 174 staff in Europe this year.

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Amdahl and NAS cut prices of IBM equivalents

by Keith Holder

PRICE cuts have been announced by Amdahl and National Advanced Systems (NAS) for their plug-compatible equivalents to the IBM 308X range.

This is in response to earlier cuts by IBM. Spokesmen for both companies said that the adjustments would maintain a price performance advantage of around 20%.

Speaking for Amdahl, Rick Watson said: "The reductions range from 5.5% for the low end of the 580 range, rising to 11% for the top end.

"This reflects the additional facilities provided and the anticipated superiority of the 580's residual value in comparison with IBM offerings."

European vice-president of NAS, John Clements, said: "We have been expecting the IBM move for some time and have been factoring our normal 20% price performance margin in recent quotations in anticipation of events."

Amdahl will also honour any orders or quotations made before the cuts at the new price.

Both lease and maintenance prices, however, will remain unaltered.

Both companies denied that this was the start of a price cutting war between IBM and the plug-compatible manufacturers.

Chris Worral, NAS's medium systems marketing manager, said: "We have had time to analyse carefully the IBM cuts and the pattern that emerges is one of readjustment, taking into account local currency fluctuations.

"Its prices are now much more uniform from country to country. This isn't going to alter anything."

CLEMENTS . . . "We have been expecting the IBM move."

Firms start to take up grants

by John Kavanagh

UK FIRMS are starting to take advantage of government backing for the use of high technology after a slow start. Grants for computer-aided design equipment and computer-controlled machine tools in particular are proving popular in industry.

This emerges from a government report* on the Industrial Development Act.

Early this year, top civil servant John Noyes said the support schemes were having little effect, despite exhibitions and extensive media coverage. He suggested the government could be treading on its own toes by offering too many overlapping schemes.

The report confirms this, but indicates that things are getting sorted out.

For example, the Flexible Manufacturing Systems Scheme, including the use of computer-controlled processes, started in 1982 with £35 million to spend over four years. By March this year only £1.42 million had been offered in the form of 50% consultancy grants and 33% development and capital costs grants. But projects under consideration could amount to grants totalling £30 million.

Over 102,000 grant applications were received. Almost 10,4… rejected or withdrawn.

Similarly, the Computer-Aided Design and Test Equipment Support Scheme, with a £… lion two-year budget, spent … million in the year ending … 31. But projects in the pipe… year-end would take the … spending for the year to … half the budget. Almost 39… cations were received.

The Microelectronics … Support Programme … coming to an end this year … its £55 million spent.

But the more futuristic … are having a slow take-off.

So far, there have only been … applications for the four-year … million scheme backing the development of fibre-optic products. Offers totalling £1.3… have been made.

And grants on the use … ies have attracted 111 … most £1.3 million has … offered, but projects … grants totalling £7 million … der consideration.

*Industrial Development Act 1982 Report, HMSO, £8.60

Radio looks at place of computing in society

by John Kavanagb

COMPUTING is taking to the airwaves next week when London Broadcasting Company (LBC) runs five days of programmes on information technology in society. Many of the programmes, featuring top industry names, will be heard across the country, as they will be passed to other local commercial stations.

LBC is being backed in the project by the Department of Trade and Industry, which is providing information and contacts.

The week coincides with the department's Concerned Technology exhibition at Alexandra Palace, covering the use of technology to help disabled people. A similar exhibition is being held in LBC's foyer.

As part of the event LBC is organising a competition aimed at finding ways of improving a disabled person's life through technology. The prize is a Sinclair Spectrum microcomputer and the possibility of the idea being developed commercially.

The week will start with an introduction by information technology minister Kenneth Baker. Others taking part will include Hermann Hauser, joint managing director of microcomputer manufacturer Acorn, British Computer Society president David Firnberg, Sinclair research director Richard Cutting and *Computer Weekly* editor David Craver.

In addition, disc jockey Stuart Henry, who suffers from multiple sclerosis, will talk about the exhibition and aids available, Stirling Moss will describe his high technology home, and rock singer Patti Boulaye will talk about technological aids for pregnant women, including scanners and monitors.

The week will cover information technology in education, business, retailing, leisure and health.

"We want to get people to think about IT and get straight their own ideas on what it can do and how it fits into their lives," said consultant Tony Fitzpatrick, who is advising on the project.

Philip Bacon, LBC's editor, added: "The week also coincides with our tenth anniversary, so we want to do something which looks to the future."

Fortune puts single-user versions on to market

by Caroline Burgess

US MICRO maker Fortune last week announced two single-user versions of its successful 32:16 multi-user range after many delays. Other products launched at the same time include two multi-user versions, more software and communication facilities.

Last month two UK Fortune distributors bought out their own single-user machines, independently developed after the US company announced further delays.

Bill Macpherson, Fortune's UK marketing manager, said: "We were very pleased about the distributors' action. But we expect them to fall into line with us over the coming months."

According to Fortune, delays were only on the software side and it wanted to announce the complete product range all at once. The delays were attributed to development taking longer than anticipated and test procedures that meant two months' delay if a fault was found.

MACPHERSON . . . pleased.

The single-user systems … based on a 32:16 processor, … memory and either a 1… Mbyte 5¼in Winchester … Both are capable of suppor… second terminal and run … of FOR:PRO, Fortune's … driven Unix-based oper… system.

Called Professional … tions, the systems, which … mediately available, will … under £5,000 and just over … The new multi-user … start at between £11,000-£1…

The multi-user systems … with either a 20 or 30 Mbyte … chester with a 45 … access time. They are des… Macpherson as being "… end mini class".

BBC sets up link with BR

by Donald Kennett

THE BBC and British Railways have set up what they claim is the world's first electronic link between a teletext service and a viewdata service.

The link is used to transfer news about rail services to the BBC's Ceefax teletext pages via a newsroom subeditor's terminal without rekeying.

BBC teletext manager David Wilson said: "This is the beginning of what we hope will be a fairly major development in gathering information in this way. We are negotiating to do it with a number of other people and we expect the timescale to set up the next link will be fairly short – probably a matter of weeks."

There were no immediate plans to gather telesoftware by this method for its broadcasts, he added.

BR's database is already linked to Prestel, where it fills 13,500 frames – one of the largest databases on Prestel. It has also been used for about a year by the IBA, which transfers the information manually to its Oracle teletext.

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Pioneer Michie rallies research

by John Riley

ARTIFICIAL intelligence pioneer Donald Michie last week announced that he has set up an independent, computer industry funded research institute. He hopes it will be the rallying point for IT research in this country.

The new institute, to be set up in association with the University of Strathclyde, is Michie's swift riposte to the Alvey Committee's conclusion last year that there should be no single publicly funded IT centre in the UK.

Called the Turing Institute, after the British mathematician who laid the foundations of modern computing, the new research centre aims by being a "seed-bed of innovation" to attract the "lost generation" of British IT researchers now in the US back to the UK.

Industrial sponsors for the first year are already oversubscribed, and are limited to eight concerns: ICL (West Gorton); Sinclair Research; Thorn EMI; Shell (Amsterdam); Shell (Thornton); GMD (Bonn); and two government agencies to be announced after ministerial approval has been given.

Each will contribute £15,000 for the opportunity to second staff to the institute, to have access to prerelease software and advance details of research, and to attend seminars and discussions. Michie aims to attract 25 companies each paying £20,000 for the second year. Michie is to step down from his post as Professor of Machine Intelligence at the University of Edinburgh in September 1984 to devote himself to the Institute full-time.

Michie believes that the "time is ripe for a new initiative because rapid advances in hardware are now convergent upon a mature understanding of software engineering and machine organisation." Therefore, the Institute will concentrate on fundamental research in computer architecture, automatic programming, expert systems and advanced robotics.

"We see no objective more important than making computing power more readily available to end users without the intervention of a hierarchy of systems analysts, programmers and operators," said Michie.

Michie, who stayed in the UK against all the odds after his own work in artificial intelligence was severely set back in 1973 by the controversial Lighthill Report, believes that computer exiles can be attracted home. "British work has had little impact in the last decade because it lacks backing or focus in this country and our most valuable natural resources are being dissipated through lack of organisation," he said.

"If we can provide the kind of environment that magnetises people, like the Japanese Institute for New Generation Technology, for example, then salary and equipment are not so important."

MICHIE . . . Sets up IT research centre.

Apple lays off 23 in Cork

by Tom MacSweeney

APPLE has laid off 23 employees at its plant in Millstreet in north Cork, where it makes keyboards for the personal computers produced at its Hollyhill plant on the north side of the city.

The 23 workers were recruited earlier in the year on a temporary basis, and they were told their contracts would not be renewed and then let go.

Apple says that the temporary staff were taken on to meet increased production demand for their Apple IIe and for the Lisa but that when that was met the temporary staff were no longer needed.

The company said that production levels had now returned to normal requirements from the peaks earlier in the year and they did not need the extra staff.

Apple said it operated a policy of taking on extra staff when needs demanded, but at all times would protect its permanent employees.

Millstreet also makes peripherals the spokesman said there was no threat to permanent jobs.

US airlines ban in-flight computers

by Caroline Burgess

THE use of computers during flights has been banned by seven US airlines because of fears they will interfere with the planes' electronic systems. But the US Federal Aviation Administration and the UK Civil Aviation Authority doubt there is a danger.

The airlines are worried that radio frequency from the computers will affect the navigation and communication systems. Both the FAA and the CAA have investigated the problem and decided to leave the decision to the individual airlines.

"We alerted the UK carriers to the slight risk in June, 1982," said a spokesman for the CAA. "But, providing the distance between the computer and the plane's equipment is more than a few feet we are satisfied the interference is insignificant."

A spokesman for British Airways said: "We keep a check on the situation but feel that they are not powerful enough to affect the controls. They have not caused us any worries."

The CAA has not received any reports of problems from UK airlines. And in the US, only United Airlines has actually named an incident. It claimed a computer seemed to interfere with the navigation equipment causing a faulty reading.

Among the airlines to ban computers are American Airlines, United Airlines, Eastern Airlines, Western Airlines and Texas Air. All are worried about taking chances with new technology that they do not know much about.

Most US airlines ban the use of portable televisions and AM-FM radios but allow hand-held calculators. FAA regulations state that an airline has to determine if an electronic device is dangerous.

Nat Semi builds to meet circuit boom

by Philip Hunter

NATIONAL Semiconductor is to build factories and laboratories in Texas and California to meet the surge in demand for integrated circuits brought on by the personal computer boom.

The company is now back in profit after turning in a \$10.7 million loss for the year ending May 1983, but like other semiconductor makers has been unable to satisfy the recent huge demand which has set delivery times rocketing.

The company plans capital spending of \$200 million in 1984 including a 290,000 square foot semiconductor factory in Arlington Texas, and a 125,000 square foot \$125 million laboratory to develop low power chips at its headquarters in California.

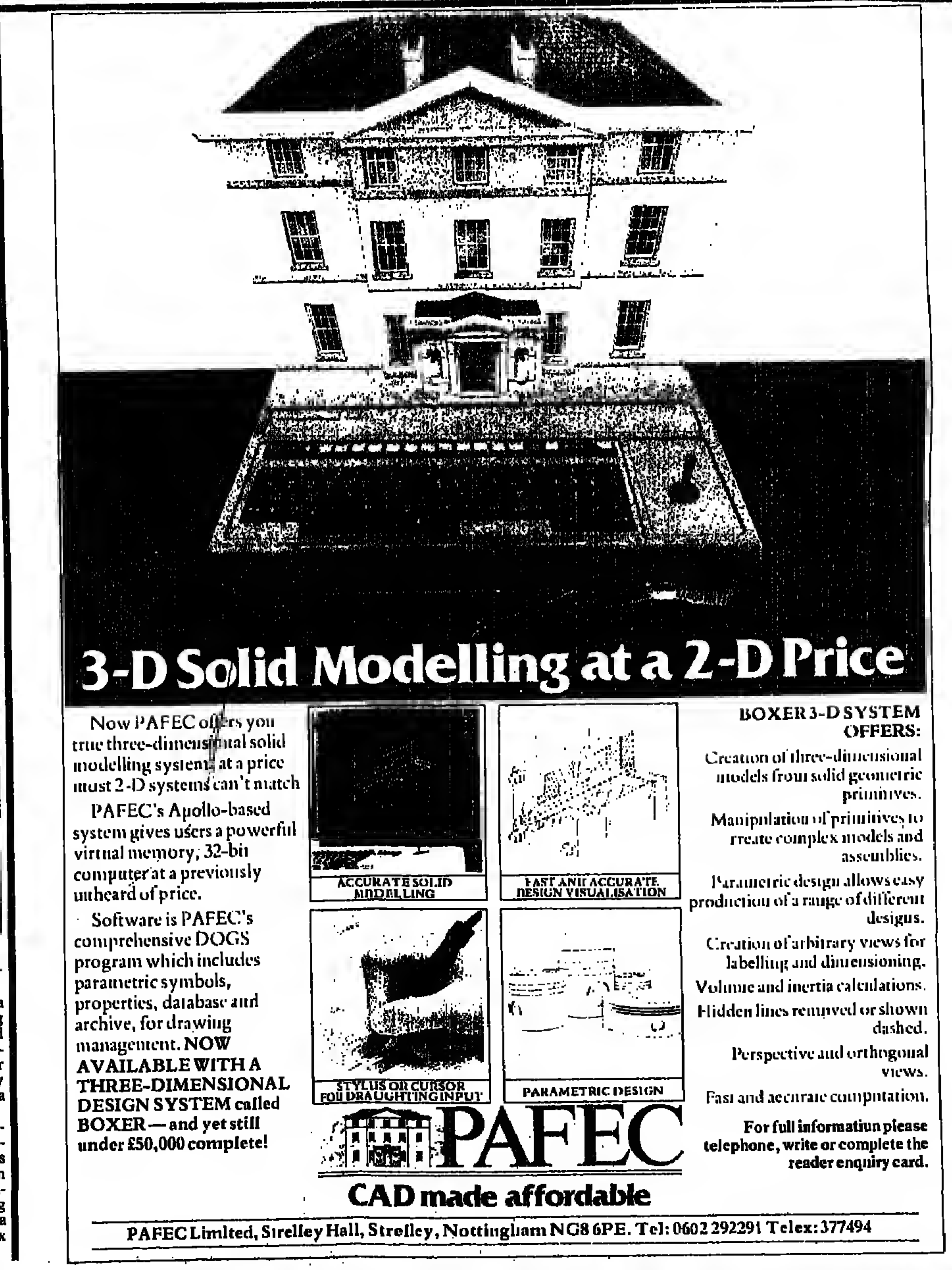
The company returned to the black in its last fourth quarter with a profit of about \$5 million, and then moved ahead to earn \$10.9 million, or 41 cents a share, on sales of \$432 million for the first quarter this year ending August.

Company president Charles Sporck said that high demand for semiconductors had brought better prices, as well as cheaper unit costs following from the higher volume production.

SPORCK . . . "Better prices".

At the same time the company's plug compatible computer making subsidiary National Advanced Systems (NAS) had made a significant profit contribution after breaking even. But NAS is likely to be hit by having to follow IBM's recent price cuts of around 14%.

Other makers of integrated circuits have also had recent improvements. Intel has almost trebled its profits in the last year, up from \$13.6 million on sales of \$423 million for the six months ending June 1982 to \$36.8 million on sales of \$497 million for the first six months of this year.



France puts cash into micros

by Jack Gee

THE French government has announced programmes involving expenditure of FFr3 billion (£240 million) to develop integrated circuits over the next five years and FFr800 million (£64 million) over four years for passive components.

Industry minister Laurent Fabius said after a Cabinet meeting that President Francois Mitterrand had given the go-ahead for a new effort in the components field in the framework of the five-year electronics plan (Filiere Electronique) which runs from 1982 to 1986.

The plan requires French industry to achieve a trading balance in integrated circuirs, become independent of foreign supply and technology, and create 1,000 new jobs within three years.

The government, which pins its hopes of success on France's two principal manufacturers, Thomson and Matra, is convinced that the entire electronics plan will collapse if these objectives are not attained.

The government has assumed responsibility for financing two-thirds of the investments required for research and development, estimated at FFr3.4 billion (£275 million), and for manufacture. These are reckoned at FFr2.2 billion (£180 million).

Production by French and foreign firms in France must rise from FFr1 billion (£80 million) in 1982 to FFr4.6 billion (£370 million) in 1986 in constant francs to allow for the growth of the market by the end of the five-year plan.

Thomson, including its own factories and those of its subsidiary, Efcis, and Eurotechnique, which it acquired from glassmaker conglomerate Saint Gobain last year, must increase output of integrated circuits from FFr370 million (£30 million) in 1982 to FFr2 billion (£160 million).

Matra Harris Semiconductor, in which Matra has a 51% stake, and Harris has a 49% stake, has a target of FFr1 billion (£80 million) in 1986, rising from FFr50 million (£4 million) at the start of the plan.

According to the government's presentation of the cost of the integrated circuits plan, it was clearly underfinanced to the tune of FFr2.6 billion francs (£325 million). It is not clear whether last week's announcement of government cash means a genuine new injection of finance.

Thomson is still waiting to collect the FFr150 million (£12 million), which the government had promised it for taking over Eurotechnique from Saint Gobain.

SPOTTISWOODE and RUBIN . . . Second-line support.

Dealers gain new support

by Claire Gooding

MICROCOMPUTER dealers are to get their own independent support from a new City of London company, Trinity Resource Ltd. Trinity has been formed to give second-line support not to end users, but to dealers, who often find themselves inundated with technical problems they can't solve from end users who have nowhere else to go.

The idea behind Trinity is to solve the main problem of software distribution: too many packages and not enough support for any of them. Trinity's team, led by Steve Rubin, has selected a small group of packages in a variety of areas. None of the packages compete with one another, although there might be top-of-range and entry level products in the same area, such as accounting.

Trinity itself is conversant with its chosen packages and able to support them. It will set up contracts for support with dealers who are then able to call in Trinity to help with making sales and providing post-sales support.

The Trinity service will include small software jobs along the traditional lines of a software house, but usually limited in customisation.

"No job will take more than 30 days," said Trinity Resource director Clare Spottiswoode. "If asked, we'll provide a spec and set up the dialogue with the customer. Then we'll go and code. The whole process from enquiry to sale should take about six weeks from beginning to end."

Trinity Resource is specialising in the more complex packages in the upper range of business software. Already supported are Holland Automation's HAI*LINE financial management package, Ashton Tate's dBase IIdatabase, Intelligence UK's MicroModeller, word processing and telecommunications packages and other products.

First attempts will centre on the ICL Personal Computer dealers, who are already queuing for Trinity marketing service. "The major advantage in starting with the ICL PC is that it's a small market, and the marketing resources are thin on the ground," explained Spottiswoode.

Managing director Steve Rubin chose the catalogue of products for the Trinity marketing service based on his experience with the company's parent, Patrick and Leach, an ICL Trader Point dealer.

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School head makes hunger strike protest

by Jack Gee

GUY Leclere, headmaster of a French private college, has gone on a hunger strike in protest against the government's refusal to help him finance classes in information technology.

Leclere, a former Roman Catholic priest, whose brother Edouard Leclere heads France's most successful group of discount supermarkets, said he would continue to refuse food at Saint Louis de Chateaulin College, near Quimper, Brittany, until the Ministry of Education gave way.

"I have 21 pupils enrolled for this computer science class," said Leclere. "It is an important step forward, because the class will offer opportunities for technical training in the computer industry."

The headmaster added, "The local authorities are breaking the law in refusing their support, because they are required to support ventures of this type."

The former priest – five of his 14 brothers and sisters have entered the Church – is inspired by an almost religious fervour in risking his health, and perhaps his life, to obtain government co-operation in providing a computer course.

Guy Leclere's hunger strike has helped to underline the shortage of computer specialists in France. The government last week announced that it is opening new classes in universities and training schools to turn out more teachers, engineers and technicians to meet a serious lack of personnel.

Secretary of state for education Roger-Gerard Schwartzenberg, said France plans to train 100,000 teachers to give computer classes in high schools by 1988.

The Defence Ministry has released 400 engineers this autumn from their 12-month stint of national military service to enable them to give computer initiation courses to 10,000 unemployed youngsters. Over 1,500 engineers volunteered for this task.

French conscripts are paid £35 a month. Those detailed for teaching will get $180.

The government also announced last week that it will give FFr15 billion (£1.2 billion) cash support to the electronics and computer idustry this year. Industry minister Laurent Fabius said state aid will total over FFr10 billion (£800 million) in 1984.

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Ferranti wi[ns] Swiss airport deal

FERRANTI has won a [...] lion order from Switzer[land to] equip Zurich and Geneva [airports] with a broadband cab[le] flight information network. [It is] the first export order f[or the] system based on the co[...] Find service, which is simi[lar to the] installation for British A[irports] completed earlier this year. [The] company says that it is o[n the] verge of announcing [...] contracts for other foreig[n air]ports.

Secure contract

EUROPE'S largest security [orga]nisation, Group 4 Securi[tas, has] lodged a big OEM contra[ct with] Altos Computer Systems [for the] supply of 16-bit microco[mputers.] The security firm will u[se the] micros as access controllers [in its] System 3000 security s[ystem,] which uses identity c[ards to] control access to buildings.

BT picks Plessey

BRITISH Telecom has p[icked] Plessey for a £7.5 million e[quip]ment in BT's Digital Servi[ce Pro]tection Network. Plessey [will] supply a computer-con[trolled] system which will autom[atically] switch telephone traffic [to dif]ferent lines when a netwo[rk] fails, as well as indicate [where the] failure is and what action [should] be taken to repair it.

Prime order

PRIME'S first UK order [for its] new top range 9950 [...] came from ICI, not ICL, [as re]ported in *Computer Weekly*, [Sep]tember 22.

Three for Zilog

THREE orders totalling £[...] lion have been received by [Zilog] for its System 8000 Unix microcomputers. The orders [are] from McDonald, Data Rese[arch] and Brandt. System 8000 is b[ased] on Zilog's Z8001 16-bit [pro]cessor and the Unix System [...] was first launched in August.

A real Unigem

UNIX software house [...] Software of London has [...] £75,000 order for its U[...] financial management [...] from UK Fortune distrib[utor Da]tascope Micro Systems. The [soft]ware will be implemented [on the] Fortune, selling at £750 [...] module.

Property change

SPERRY has taken a big [...]ment order for a mainframe [...] to build a database of [...] property ownership in Sc[otland.] The order was placed by the [De]partment of Registers of S[cotland] and calls for a system based [on a] 1100/61 mainframe to give access to details of recent [...] in property ownership.

Air traffic control

THORN-EMI subsidiary [Soft]ware Sciences is ready to [...] multi-terminal computer [...] the Oceanic Area Control Ce[ntre at] Prestwick in Scotland, after [...] years of software develop[ment.] The contract, worth about £[...] lion, was given to Soft[ware] Sciences in 1978, and is [...] system for controlling air [traffic] over the North Atlantic, [in con]junction with the Ca[nadian] Oceanic Centre in Newfoundl[and.]

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CONTINUOUS STATIONERY A4 Size

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BTG invests again in fibre optics

by Philip Hunter

THE British Technology Group (BTG) has made its second investment in fibre optics by investing £580,000 jointly with Barclays Bank in the Leeds-based Focom Systems.

Focom sells a range of fibre optic modems and multiplexers to link both single terminals and multi-terminal systems to larger computers.

The company will soon launch a bigger product called Dart aimed at large office blocks to link terminals and local area networks.

Focom is specialising in the business market, and is avoiding the tempting but highly competitive market offered by cable TV.

"We are interested in data communications rather than home-based products," says managing director Ian Elliot.

The company broke even on turnover of £840,000 for the year ending March 31, 1984.

So far the company has ploughed all profits back into research and development. But Elliot says now that with the Dart development almost complete, it will move into the black.

President Newell gives a warning

by John Kavanagh

OVER one in four computer systems fail to do the job they are bought for, said F International managing director Alison Newell after she was elected president of the Computing Services Association (CSA) last week.

And she warned that companies must not rush blindly into the new technology field.

"Technology has the power to revitalise British industry and sustain and increase its competitiveness," she said.

But she cautioned: "Management must have a clearer understanding of what it is about in order to avoid the chaos which can result from installing the wrong system in the wrong place at the wrong time."

The wrong investment could have "disastrous consequences", Newell said.

The combined annual losses of firms investing in the wrong systems amounted to around £60 million.

Newell said the CSA had an important role to play as it represented over 80% of the UK services industry.

One of its main intentions was to improve the quality of members' services.

This was understood by the industry and by government but not by industry as a whole, she claimed.

One of her aims would be to increase this awareness.

"I would like to see a situation where any manager considering how to upgrade and improve his systems would turn automatically to CSA members," she told her audience.

Newell also called on government and CSA members to reverse the trend towards a national services trade deficit.

By 1990 the UK would be importing 6% of its service needs, resulting in a £1,000 million trade deficit.

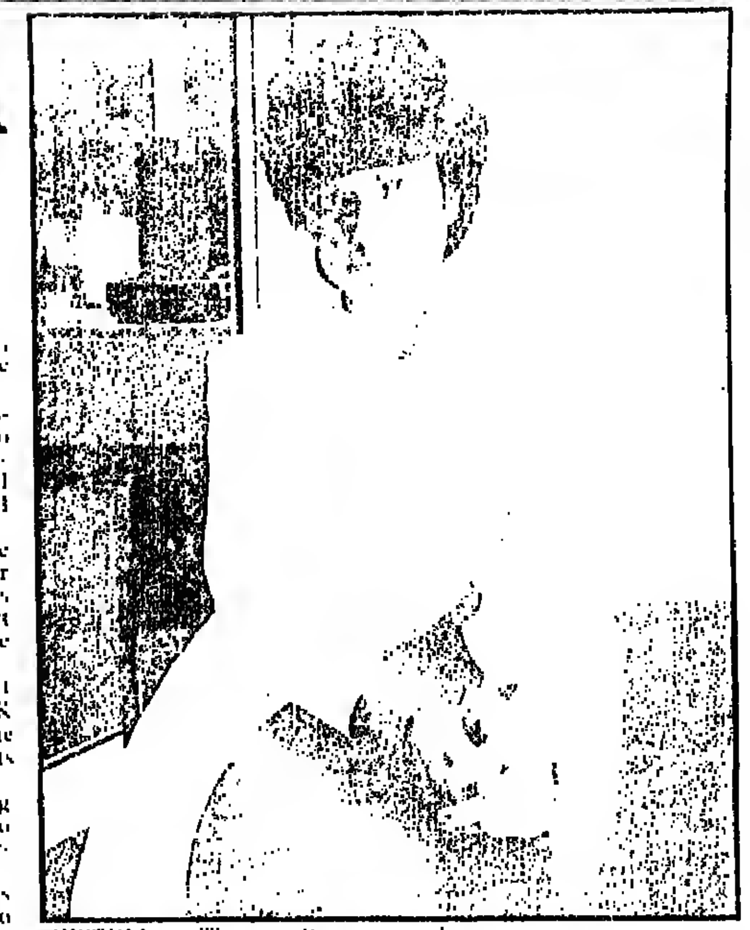
"The computing services industry in this country continues to provide one of the most innovative and high quality software and systems in the world," Newell said.

"Yet we currently contribute only 6% of the world demand for information technology. It is essential for an effective export drive to start from a strong home base," she asserted.

Industry and government should be prepared to support UK services in the same way that the French and German governments supported theirs.

CSA members were not looking for hand-outs but a willingness to invest in UK products and services.

She added: "Such investment is essential if British industry is to remain competitive."



NEWELL . . . Wants an effective export drive.

Micro Focus aims to double its staff

by Claire Gooding

SYSTEMS house Micro Focus is following its arrival on the Unlisted Securities Market (USM) with a drive to double its staff.

The company is leaving behind its "small but successful" image by recruiting another 50 programmers, mostly to work on development tools.

One of the reasons Micro Focus went to the USM was to fund paying additional staff. The opportunities presented by the rapidly growing market for 16-bit systems meant that the present staff – often supplemented by self-employed contractors – could not cope with its many software projects.

The new staff will be divided between the Micro Focus development centre in Swindon, and the new Thames Valley office nearer London.

The company is seeking a range of talents.

"Programmers tend to specialise in particular areas, such as chips or operating systems," said UK operations manager Colin West.

A simultaneous campaign in the US will bring another 30 staff to the company's US office in Palo Alto.

Micro Focus has been looking outside its own resources to expand its range of offerings. It recently signed an agreement to market Softwrite's Sourcewriter, and it has a loose agreement with several companies whose products fit in with Micro Focus' own Cobol development tools.

These include the Delta applications generator, which has just been adapted for use with Level II and CIS Cobol.

The RIMS/MPG Cobol generator for DEC kit from ISR, and the Bostel language for developing Cobol applications from Swedish software house Swedesoft are other products.

Micro Focus also supplies marketing and technical help to software houses using its Cobol compilers.

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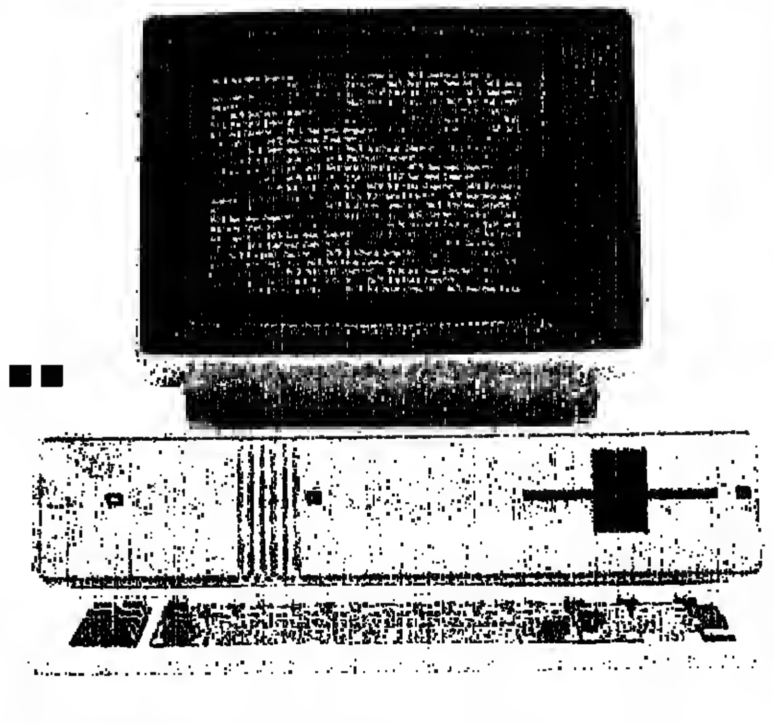

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KAPOR (seated)... Creator of 1-2-3 and VisiCorp.

Lotus program is an instant hit

by Nuala Moran

LOTUS 1-2-3, an IBM PC program which has sold 60,000 copies in the US since its launch six months ago, is now available in the UK. And between 500-1,000 copies have been sold in the two weeks it has been available.

Written by Mitchell Kapor, the creator of VisiTrend and VisiCorp, 1-2-3 combines spreadsheet analysis, graphics and information management. It is the only product of the Lotus Development Corporation, a software company set up by Kapor about a year ago.

According to Chris Morgan, Lotus' vice-president of communications, 1-2-3 is designed to be used by both "newcomers who have never had exposure to hardware or software and by power users adept at using software."

The UK franchise for 1-2-3 has gone to Reflex, which is also a new company. It was set up six months ago by John Weatherhead, formerly with the distribution company Rapid Recall. Weatherhead is confident that 1-2-3 will get a large slice of the IBM PC market here.

"There are between 20,000 and 30,000 IBM PCs in the UK and we expect at least 70% of this market to go for Lotus. We could go as high as 80-85%," he said.

Lotus has also established a UK subsidiary. At the moment it is sharing facilities with Reflex in Reading. The two companies are currently sharing responsibility for supporting 1-2-3 but firmer lines of responsibility will be drawn once a full management team is established at Lotus UK.

Over half the IBM dealers in the UK were trained for 1-2-3 before the official launch. Dealer kits are available which include a preview version of 1-2-3 on disk, a tutorial disc, a demonstration disc and a keyboard template.

Plans are in hand to adapt 1-2-3 for Texas Instruments' personal computer, the DEC Rainbow, ACT's Victor and the Wang personal computer.

Morgan said that Lotus would also consider adapting 1-2-3 to machines that are popular in Europe but not in US. The company estimates that around 30-50% of its market will be in Europe.

European language versions are planned and Lotus has had talks on setting up in France and Germany.

Sord plans to train world's industrialists

by Tom MacSweeney

SORD is planning to develop hardware and software systems industrial training which it hopes marketed worldwide, across the company's founder and president, Takayuki Shiina.

He said at the opening ceremony of its £12m factory at Coolock, County Dublin that it was in negotiation with the Irish State industrial authority, AnCO, about the project.

"With AnCO's skills in training and the experience it has, combined with our technological and programming skills, we could develop such a system," he said.

Since 1980, when it came to Ireland, the country has been a base for European manufacturing, marketing, R&D and training headquarters.

EEC won't enforce compatibility

WHILE supporting the idea of compatibility in computer equipment, the EEC Commission is not prepared to go to the lengths of introducing rules requiring manufacturers to give advance information on interfaces.

This was made clear at the September session of the European Parliament in Strasbourg when the Commission gave a written reply to a question from Dublin Euro-MP, Richie Ryan.

He argued that public interest required "the widest possibility of connecting into computer systems, processors and other plug compatible elements."

And he asked: "Will the Commission clearly define and effectively ensure timely provision of adequate interface information by computer manufacturers to their competitors."

In its written reply, the Commission accepted that this was an important matter for both manufacturers and users; for that reason the Commission had evolved an active policy aimed at encouraging standards within the Community.

But the Commission would not take general measures relating to interface information so that each manufacturer would have to provide to competitors the information they needed to produce compatible equipment.

Harris adds supermini

by Keith Holder

HARRIS Systems has unveiled the latest addition to its supermini range which, it claims, will outperform Digital Equipment's VAX 11/780, IBM's 4381 and Prime Computer's 9950.

The Harris 1000 operates at four Mips and is designed for scientific and commercial applications requiring high performance including data acquisition, university research, product design and CAE.

"The system offers many price performance advantages," said UK general manager Frank Walters. "By comparison, its performance is up to three times higher than a VAX 11/780 and twice that of a Data General MV/1000 at comparable prices."

Entry level cost for the system is £210,000 and orders will be accepted now for delivery next spring.

The computer owes its speed to a new 100K family of emitter-coupled logic integrated circuits which allow higher switching speeds. Norman Swailes, Harris director of hardware development said: "Many competitors quote very high Mips numbers, but reach them with multiple processors. Our design, using ECL speeds, only needs one."

Not everyone is convinced, and Malcolm Hoar, marketing manager for Prime Computer said: "Mips is a very limited measure, it is not how high you can get but what you do that really counts."

Hardware features for the computer includes 48 Mbytes of virtual memory and optional 32, 48, 64 or 96-bit architecture.

Richard Drake reports on the BCS object-oriented software conference

How Lisa taught Apple a lesson

LARRY Tesler, the inspiration behind Lisa's revolutionary user-interface, spoke in London last week about the lessons Apple had learnt from the massive development effort that created the Lisa.

He was speaking in London at a packed British Computer Society conference on object oriented software.

"I suppose we proved you could create the most up-to-date object-based interface using a non-object oriented language," he told delegates, but admitted that there had been drawbacks.

Different teams approached the same user-interface issue in subtly different ways and the eventual much-praised consistency was difficult to achieve.

From now on, he said, those problems would not arise, thanks to Apple's new object-oriented development language Clascal.

The addition of classes to Pascal allows software houses to write applications that reside in windows on the screen exactly like Apple's own software.

And Tesler claims that, contrary to expectations, programs written in this way actually run faster than by conventional methods.

Four object-oriented products were displayed at the conference, including VisiCorp's VisiOn and the seminal Smalltalk-80 system from Xerox.

All the speakers acknowledged the contribution of Smalltalk as the fullest expression so far of the object-message metaphor applied to software systems.

Smalltalk was developed by a team of researchers at Xerox Parc, Palo Alto, during the last 10 years.

One of the leaders of the group, Dr Adele Goldberg, said that although its research goals were not fully achieved, it had decided to release Smalltalk-80 to allow hardware designers to get to object-oriented concepts.

Smalltalk's remarkable power and its use of a mouse as input device allow for very fast program development and debugging.

All parts of the system, including the process you are running, are objects that can be inspected at any time.

Tesler, who originally worked with Dr Goldberg at Xerox Parc, said that to compare problems with ordinary languages was like "trying to compare walking and flying".

Doubts remain, however, about Smalltalk's performance on present microcomputer hardware.

Dr Brad Cox of Productivity Products Inc, described an alternative product, Objective-C, which compiles Smalltalk-like source into C language source code.

This hybrid approach is similar to the one used by Apple and Unical.

According to Dr Cox, it combines the flexibility of object-oriented the efficiency of a conventional compiled language and, moreover, Objective-C can be used on a number of common environments including Unix.

All the speakers were agreed on one thing, that the time was ripe for the introduction of the object-oriented approach.

The mere 40,000 lines of code in Smalltalk-80 compared to 400,000 in Unix showed the power and economy of object-oriented construction, Dr Cox said.

Whether other hardware manufacturers will follow Apple's lead in producing a machine dedicated to this type of software remains to be seen.

But many observers felt that the presence of 15 delegates each from IBM and ICL at this conference may just be extremely significant.

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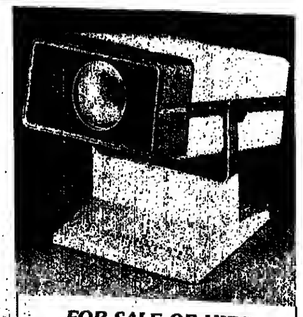

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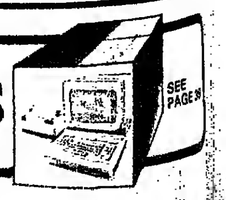

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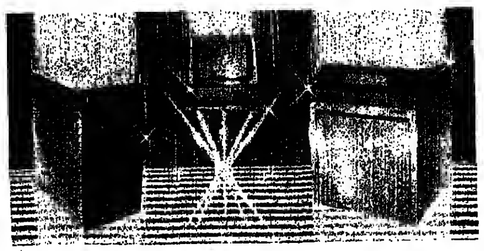


nt northern telecom

Where computers and communications meet

US Navy boosts Planet local net

by Caroline Burgess

A US naval supply centre has ordered the UK-designed and manufactured local area network Planet from Racal-Milgo in a deal worth $4.2 million.

"It is our biggest individual order to date and we are delighted," said Tim Holley, Racal-Milgo managing director. "It is significant – to supply the US navy with a UK product."

Earlier this month Racal-Milgo marked the first anniversary of the launch of Planet with the announcement of major new enhancements to the system. Orders valued at about $4 million were placed in the first year – before the US order.

The enhancements include a compact card nest allowing terminal access point for up to 64 individual ports, easy access to Planet for PABX users, two protocol converters and a single-port TAP operating at data rates up to 64Kbits per second.

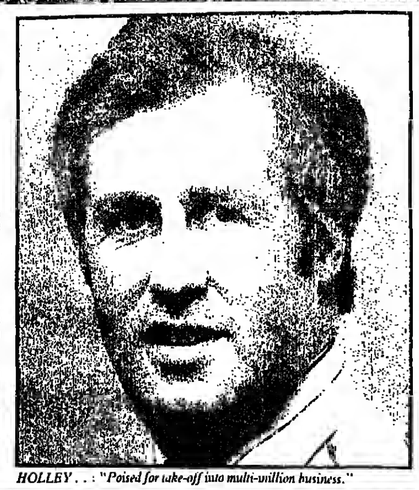
"The market for local area networks is poised to take off worldwide into a multi-million pound business," said Holley. "Today every child is being taught how to use a computer. And when they get into the world of work they will expect to have some form of keyboard device."

It is being predicted in the US that by the early 1990s there will be one workstation per office worker. Racal-Milgo sees the local area network as the fastest growing market, claiming that it is set to grow by a factor of more than 100 by 1987.

Planet's flexibility and self-healing capabilities are seen by Racal-Milgo as its prime selling points.

The ability of Planet to withstand a failure of any of its components or a break in the cable is leading to developments for use in the defence field. "One of the lessons learned from the Falklands campaign was the need to maintain communications on board a vessel damaged in battle," said Holley.

"The self-healing capabilities of Planet will allow vital communications links to continue on a badly damaged ship. It will also reduce the amount of heavyweight cabling needed on board".



HOLLEY . . . "Poised for take-off into multi-million business."

TRICKETT . . . "Nothing gets carried through in UK".

Trickett quits for top US job

by Keith Holder

KEITH TRICKETT, one of the men behind Digico, and former managing director of Compeda, has quit Britain to become Gerber Systems' vice president of sales/marketing in the US.

The move follows speculation that he was forming a new CAD/CAM house in this country with Dr Norman Schofield, ex-technical director at Compeda.

This fell through, said Trickett, "because we couldn't raise funds at reasonable terms. The venture was not going to be small and I was not about to start on a shoestring budget.

"The trouble with this country," he continued, "is that we are very good at inventing things but the financial services are slow to back something new and nothing gets carried through."

His position at Gerber will give him responsibility for exploitation of technology, mainly in mechanical and chemical applications, using a "small dynamic group".

He said the size of Gerber, combined with the relative autonomy of his group, had figured strongly in his choice to join, "besides which the US is currently a centre of activity".

Asked what he thought of the Cadcentre plan to move into the US market, he replied, "It's difficult to know what they have to sell. I think the main reason the US buys from Britain is more to do with technology – they're not really aware of the software tools developed in the UK."

Despite the move and his optimism about the US scene Trickett added: "I haven't torn up my British passport yet."

Digital sponsors seminars

by Caroline Burgess

DIGITAL Research is sponso... seminars for OEMs and soft... developers in a bid to keep th... up-to-date and increase comp... tion between them.

"The market needs to u... ideas and solutions," said B... Hailey, Digital Research dir... of European operations. "M... ware's life is not long so you h... to enhance products continu... And customers are demand... steadily increasing standards."

The two-day seminars will t... place in London, Paris a... Munich. The first day will be... update on recent developm... and the second will contain ... tutorials looking at problems ... counted by developers.

The London forum will be... the Cafe Royal on Octob... 17-18. Among the topic... will be the NCC group direct... marketing, who will outline det... of development schemes suit... from the NCC, and a develope... specialist list from the US.

Tutorials will cover design... for the concurrent environ... languages and graphics, comm... software and productivity to... There will also be a feature talk... to support a product once it h... been marketed.

Two seminars a year are plan... for each venue. The Munich f... rum is scheduled for October 2... 21, and the Paris forum for N... vember 10. Forums held earlier... the year in London and Mun... were attended by over 750.

Apple Computers is to hol... European software developers ... ference on October 3-4.

Save on maintenance

by John Kavanagh

A UK FIRM is offering Digital Equipment users memory boards which, it claims, help pay for themselves in saved maintenance costs. Computer Matching Services of Woodford Green in Essex has introduced boards for DEC's Vax minicomputers with five-year warranty.

The one-megabyte board costs £1,950 and two-megabyte boards start at £3,300. DEC maintenance is about £18 a month on one-megabyte boards, or £1,000 over five years.

"The maintenance savings will be very big for a user running three or four Vax machines, perhaps with six megabytes each," said Owen Smith, founder director of Computer Matching Services.

"We're putting our money where our mouth is on the reliability of these products. We also offer 30-days' free trial."

The boards are made by EMC, one of the biggest memory suppliers in the US. Computer Matching Services is also introducing EMC's upgrade kits for smaller Vax systems. These kits enable users of the original Vax-11/750, for example, to go up to eight megabytes. DEC limited the memory to two megabytes.

Cincom puts its money on Mantis

by Nuala Moran

"MANTIS will double your programmer productivity in 6 months or we will give you double your money back." This is the bold offer from Mantis distributor Cincom Systems, and it is open to users of the competitive UFO and DMS systems under CICS.

Users who want to take advantage of this offer will have to pay £1,000 for a 60-day trial. The trial will include three days training for programmers, which will be a compulsory part of the trial, said Terry Booth, Cincom UK managing director.

"Mantis can improve application development performance eight to 10 times," said Booth, "so we don't feel we are taking much of a chance with the offer.

"Cincom doesn't have to sell Mantis. The present UK customer base does this."

Booth estimates that there are over 100 DMS and UFO sites in the UK and, he said: "We'd like to see them all to think about moving over to Mantis, because it's a product that we know is better than the competition."

One problem in converting users to Mantis is that at £60,000 it is about twice the price of both DMS and UFO. Despite this it has sold well in the UK since its launch in April 1981. At the moment there are 80 UK users and Booth said 20 systems were sold in September.

"This is just a way of helping our customers to become more productive in developing our products. It is physically difficult to visit all our potential customers and this way we can get them come to us," said Booth.

Anyone who wants to take Cincom up on this offer will be able to select their own criteria for testing programmer productivity, Booth said: "If a customer finds it is not going to achieve double productivity, he will only get his money back, no questions asked and no strings attached."

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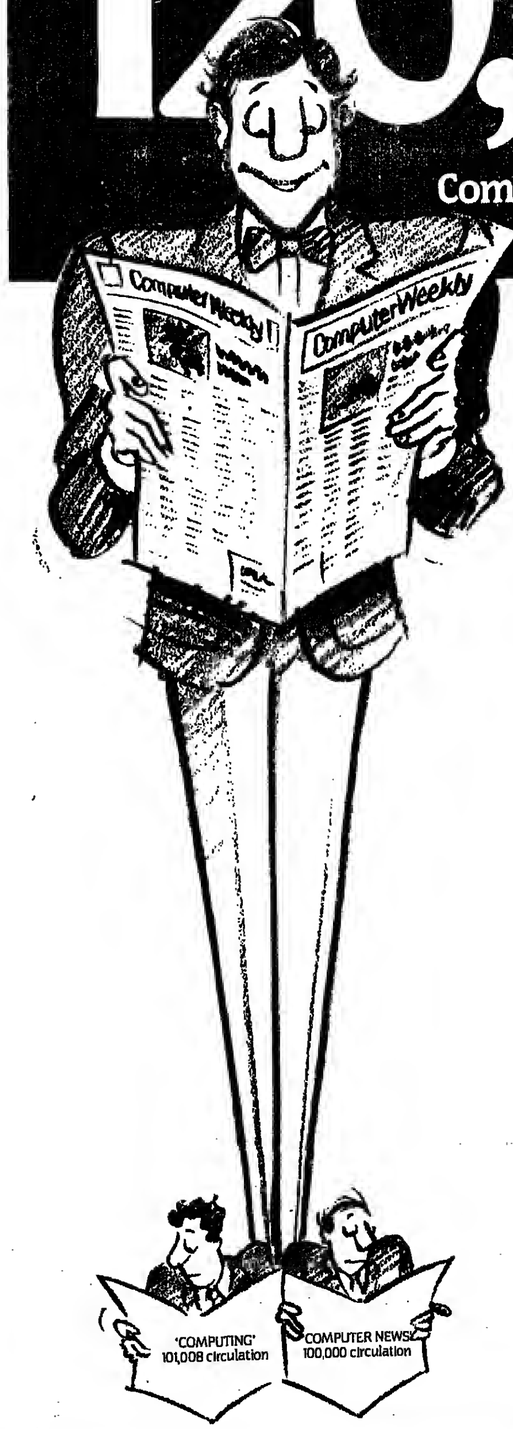

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HUENKE . . . "Esprit has all the political will it needs."

MURAKAMI . . . Outlines progress at ICOT.

World's programmes receive a once-over

John Riley reports on the progress of computing towards the fifth generation

ABOUT 160 delegates, mainly from computer companies in the UK, last week took a long hard look at the world's current long term programmes to move computing into the next generation. The occasion was SPL Insight's second Fifth Generation World Conference held in London.

Heads of the three most highly focussed IT programmes, the Japanese Fifth Generation Project, the British Alvey Programme and the European Esprit Programme, gave accounts of progress so far. There were also presentations on the more scattered US, German and French initiatives.

Although largely descriptive, the papers generated lively discussion about the approaches, aims and techniques used in each programme.

Discussion centred around the need for logic programming, the knowledge based systems research, whether sequential machines should be abandoned

"A national centre for IT should be possible in a small island."

totally, and whether the aims of the various programmes were achievable.

There was a good deal of puffing up of national achievements and cosy academic bickering. A constant leit-motif of the proceedings was a provocative videotape prepared by the pioneer of artificial intelligence, Ed Feigenbaum of Stanford University, which was segmented and shown a bit at a time over the three days.

One of the earliest papers was a call for international co-operation by Kazuhiro Fuchi, director of Japan's Institute for New Generation Computer Technology (ICOT), which is the nerve centre of Japan's Fifth Generation Programme.

"Our project is not to make Japan a stronger animal — economy is just so that we can live, but is not the goal of our life — we also want to contribute to the world, and avoid duplication of effort," he said.

He added that he was offering co-operation not from a position of weakness but from one of strength. "It is not only my personal opinion, the people within MITI now also want to make research open to the world."

Kunio Murakami, head of one of ICOT's research laboratories, outlined progress towards producing a software supported development system at ICOT. It would comprise a relational data base machine (Delta) and a sequential inference machine (PSI, a Prolog work station) which were both scheduled for completion next year.

Fuchi confirmed that when the two machines are linked in 1985, the work towards developing automatically generated software, which currently had a handful of people working in that area, would be considerably expanded.

Feigenbaum, reviewing the Japanese progress, considered that they had shown a "better than usual learning curve", and although progress towards the PSI had gone more slowly than expected, the work in the other areas had gone more quickly.

Feigenbaum hit out at the Prolog language, which is the basis of the Japanese machines, arguing that too much adherence to Prolog was risky, because it was not yet a proven language. "The vast amount of know-how attached to Lisp will have to be reinvested," he said.

That view was contested by Fuchi, who said he believed that logic programs were important because of the need for new architectures, which were parallel rather than sequential. "If we base all software on logic based languages, then we make software engineering much easier," he said.

Practical examples of how rudimentary knowledge bases are being applied in Japan were provided by Shigeru Sato, deputy general manager of Fujitsu's Computer Systems Division. His presentation and timetable of developments were broadly similar to an outline of Toshiba's programme given to the IFIP'83 conference in Paris last week by Kenichi Mori, manager of Toshiba's Information Systems Laboratory at Kawasaki.

Both companies are broadly in step in their developments of pattern recognition, character recognition and speech recognition systems.

Feigenbaum hit out at the Alvey Programme for being too dispersed physically. "A national centre for IT should be possible in a small island." He also criticised it for not being concentrated enough, with intelligent knowledge based systems not being given a large enough share; for an overemphasis on Prolog; and for weak university/industry ties compared with the US.

Another serious problem he drew attention to was the "missing generation of UK talent — which is in the US", because of salary differences which are a factor of two to three times greater than in the UK and better facilities.

Britain also needed a "technological hero of the second computer age", who could lead the programme. "You need both a chief surgeon and a hospital administrator," he said.

Above all, however, Feigenbaum concluded, Britain needed the will to succeed. He contrasted the healthy respectability of artificial intelligence in the US scientific establishment with the lingering "enfeebling virus" of the Lighthill Report a decade ago, which stamped on artificial intelligence and the important pioneering work being conducted by Donald Michie in the subject.

Brian Oakley, director of the Alvey Project, replied that with the spread of subjects within the programme, leaders were needed for each field rather than "a man for all seasons".

He considered that the Lighthill Report was "not as destructive as portrayed — and besides that was

FEIGENBAUM . . . "Britain needs technological hero."

10 years ago". He concentrated on the "revolutionary" nature of the funding of the Alvey Programme from three government departments and British industry. He also drew attention to recent notable British "firsts", including liquid crystal display technology, and to Ferranti's chip used by Sinclair in his flat screen television to cope with distorted rasters.

The European response to the Japanese Fifth Generation programme, Esprit, was described by Horst Huenke, director of the microelectronics programme in the European Commission's IT Task Force. The £950 million project still has to gain financial approval.

According to Henke, it had "all the political will" it needed to get through. The one-year pilot projects in advance of the main programme had already been selected and begun.

Speakers from France and Germany drew attention to the small scale of programmes in their countries. These were mainly developmental, and scattered research projects. "For a country of arch-planners, there are many flowers blooming in many different places," said Oakley of the French programmes.

The US is not responding specifically to the Alvey Programme, but Feigenbaum informed the conference of the developments in artificial intelligence currently underway.

The most important of these is the inappropriately named Microelectronics and Computer Technology Corporation (MCC), which is a research organisation funded by a consortium of US computer companies, including Digital Equipment, Control Data, Honeywell, NCR, Sperry, Motorola, NatSemi, Harris and others to compete with IBM.

The programmes initially to be undertaken are in the fields of Microelectronics, VLSI computer aided design, software productivity and some Fifth Generation activity, such as artificial intelligence, knowledge based systems and image processing.

Another major US programme underway is the Arpa Plan (Advanced Research Project Agency). The agency funds research primarily for defence, and much of the cash is for military applications of artificial intelligence technology.

"Super speed is the goal," said Feigenbaum, pointing out that was necessary for pilots and missile systems.

Feigenbaum affirmed that "US is determined that its market share of the computer industry does not slip away to Japanese", but that it was concerned about the Alvey and Esprit initiatives.

"The European threat is more credible with a democratic well organised EEC with co-operation," he said, "diminution of infighting in companies."

Donald Michie, professor of machine intelligence at Edinburgh University, and a pioneer of knowledge based systems in the UK, announced that he had set up an independent research establishment, funded by industry, associated with Strathclyde University.

The running debate was the use of logic languages. "We make the distinction between programming and Prolog," Robert Kowalski, professor of computing at the Imperial College of Science and Technology, University of London, who was one of the developers of Prolog, said. "The reason that Prolog is so good is it is so bad. It has a tremendous future."

Michie added: "We are Prolog junkies, but for hard work the first version is being written in Prolog and then much in Pascal or 'C', or whichever is suitable to the constraints of the customer."

The other debate was parallelism. Fuchi defended the move towards parallel architecture. "It's obvious," he said. "We need much more power if AI systems are to become popular, used in everyday life by everyone. We need a powerful machine at lower cost, and we need to develop larger integration, not just higher speed. Device technology needs parallelism."

Summing up the whole Japanese Fifth Generation approach, Fuchi added: "We are just proposing that a parallel machine is feasible in the future. We need a lot of research to determine which architecture is best and must try all alternatives — we're all open."

FUCHI . . . "We want to contribute to the world."

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Grid trains its Compass on European market

ELLENBY . . . "Expensive — and it's going to stay that way."

GRID SYSTEMS, Californian seller of up-market portable micros, is moving in on Europe. It has set up an international marketing division under Yorkshireman Roger Higgins, and is recruiting dealers for the $8,000 matt-black Grid Compass computer.

"It's high time we came into Europe," says chairman and founder John Ellenby — also an expatriate Englishman firmly settled in California. "We have Stateside customers who want us to."

He sees initial European sales coming from subsidiaries — and parents — of present Compass users in the US.

There are small numbers of Compasses already in Europe, but Grid's push into European offices and briefcases has been waiting on proper support facilities. These are now coming into place and the European operation should be running in the first two months of next year, says Higgins. The UK, Germany and France will figure as the big markets at first.

When it gets here the sleek self-contained portable Compass will sell at the equivalent of its $18,150 US price tag — getting on for £8,000 when taxes and shipping costs are added in.

"Sure it's expensive," says Ellenby. "And it's going to stay that way."

Grid has never gone for mass markets with the Compass and its surrounding Navigator system, which gives communication to mass storage and other Compasses. It has consistently presented the machine as a speciality product, peddling its uncompromising European design and tidy dimensions (2 x 11½ x 15 inches) as one-upmanship symbols for American executives.

It only recently established a distribution network in the US alongside its direct sales to Fortune 500 companies and, increasingly, US government and military establishments.

Good looks are not all the machine has going for it. It has an 8086 processor, with an 8087 to beef up arithmetic handling, with 256K of RAM and 384K of bubble memory. External floppies and Winchesters — slimline to fit a briefcase with the basic unit — are available for local mass storage. Extra file space comes through Compass Central, an 80186 based hub for a network of 32 Compasses, and connection to mainframes.

But its big bonus is the flip-up flat screen — a 6in diagonal amber-on-black electroluminescent display giving 24 lines of 80 characters and speedy, well defined graphics.

Software packages, running under Grid's own Compass Computer operating system InGrid or MS-DOS version 2.0, convert data from spreadsheets to an assortment of graph types, give usual WP and database tools, and handle data communications.

Communications are very much part of the Grid system's offerings, allowing users to plug into remote data sources through phone lines. US machines have built-in modems and have a telephone handset as an optional extra. Ellenby has been talking to the UK's British Approvals Board for Telecommunications.

"In the UK we are just in time to catch the wave of radical telecommunications improvement," reckons Ellenby. "There's an awareness — an openness."

Four-year-old Grid has now been funded to the tune of $30 million.

Micro News is compiled by Robert Parry

Bridge connects mini and micro users

by Keith Holder

USERS of DEC mini and micro hardware can now link up and communicate thanks to a single board system from Virtual Microsystems (VML).

Called the Bridge, it allows any machine, from the Vax downwards, to link through the CP/M operating system to form distributed systems of unlike machines capable of interchanging programs, and using a mass storage system for files. It carries full DEC approval and will be partly marketed by them.

The aim is to provide organisations running a DEC mini the chance to bring any other personal computers they have under the control of the main system. Opportunities also exist for companies which only use micros at present to link through a small DEC mini, say a micro PDP-11, either to expand or upgrade their system.

Mike Cleary, managing director of VML, said: "A company does not know how much important information is held on the floppy discs of personal computers.

"Though these are playing an increasingly important role, a bridge system can provide the equivalent of a PC/M personal computer, at less cost, and enables the DP department to regain control since all the files will be held on mass storage system and will be subjected to regular back-up procedures."

The device works by building a virtual microcomputer within the DEC environment using software simulation techniques. A hardware accelerator called a Z board provides four Z80 microcomputers, each with a 64K memory, and a fast bit processor to cope with communications and protocol.

With the Z board running a workstation operator is allotted one of the micros for as long as intercommunication is needed. Should the demand on the system occupy all the available micros on the board, additional operators can still run CP/M using the software simulation section, though this is slower.

Up to 16 Z boards can be fitted to a single host computer, giving an installed capacity of 64 workstations. The host computer's mass storage is treated as a "virtual floppy" which, under CP/M, can hold up to 64 files and can grow dynamically to four megabytes.

NatSemi 32-bit is due

NEXT week sees the formal US launch of National Semiconductor's 32-bit microprocessor, the 32032. Europe will see it five days later. This fully 32-bit member of NatSemi's 16000 family — with 32-bit data bus as well as 32-bit internal registers — should reach customers in sample quantities early next year, which should put it ahead of rivals from the other semiconductor houses.

Zilog, which launched its Z80000 32-bitter two months ago, is reckoning on sample delivery in the second quarter of 1984, and it looks about the same timescale for Motorola with its 68020.

Intel's offering in this general-purpose 32-bit microprocessor market, iAPX 386, does not look like appearing before autumn 1984.

There are 32-bitters from Hewlett-Packard and Bell Laboratories already around, but only in internal use — and NCR is delivering its 32-bit chip set while Intel pushes on with its Ada-oriented iAPX 432.

Taiwan-made kit is coming

by Caroline Burgess

TASHKL Computer Systems, a new London-based company, is hoping to break into the microcomputer market by selling cheaply. It will keep its prices down by distributing machines manufactured in Taiwan.

Included in the price of £1,080 are a Z-80A 6502 processor giving 64K RAM, two 5¼ slimline disc drives, 12in monitor, keyboard, eight-slot expansion unit and various adapters.

Called the Om 8064, the machine is currently being reviewed in the UK. Kuldip Tanda, Tashkl managing director, sees this as the best way to advertise the product. An advertising campaign will start in November when the machine is available.

Tashkl aims to market the machine throughout Europe and Scandinavia. But it has not yet signed any agreements with distributors. Another company will be set up to market in Germany.

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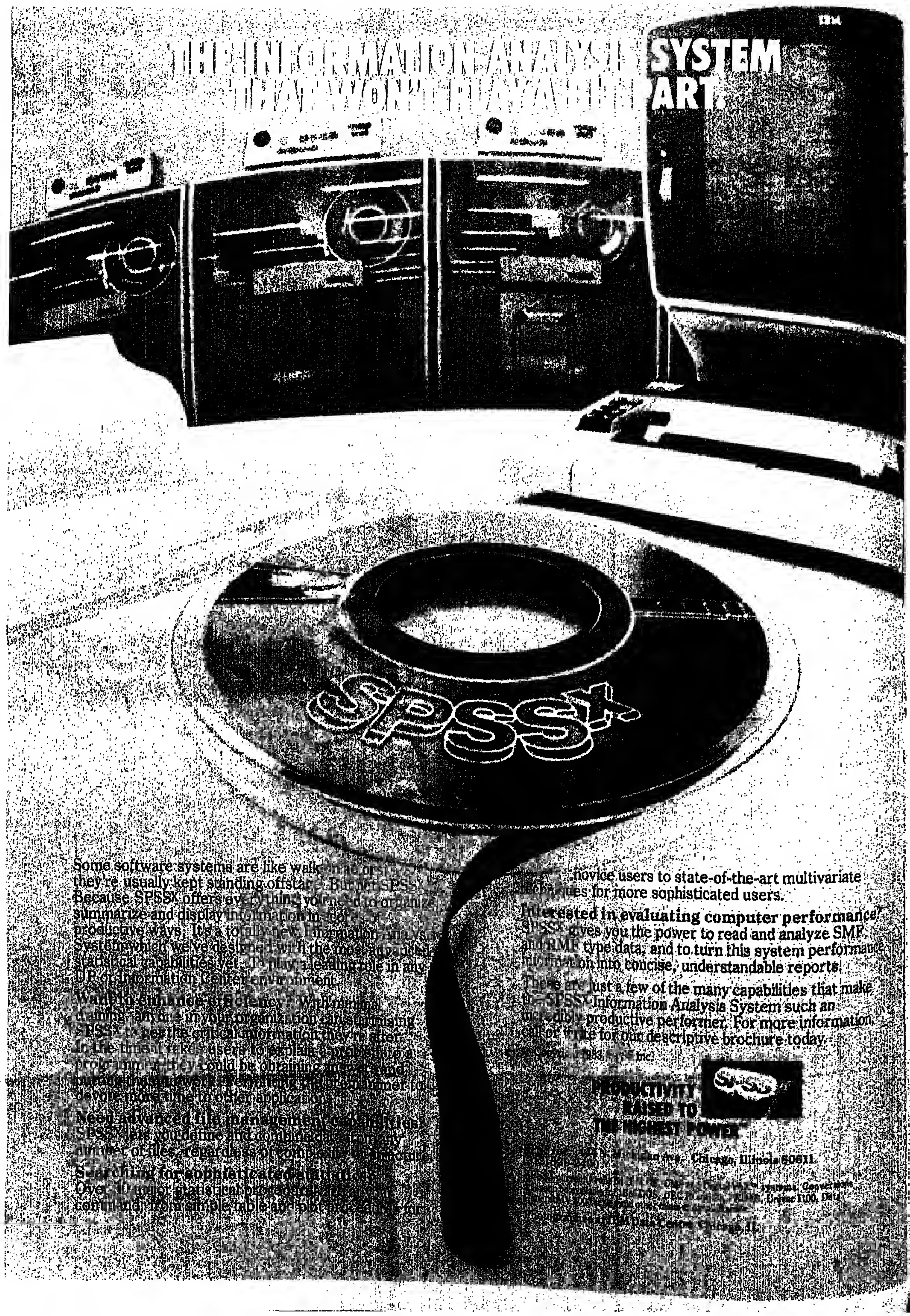


COMPANY NEWS

Memcom stock is popular

by Donald Kennett

SUCCESS crowned Memcom International's efforts to raise £1.3 million of working capital last month when 9.2 million of its shares on the Over-The-Counter market offered by Afcor Investments was oversubscribed by 2½ times.

Memcom is an 18-man company that was founded in the US in 1977 to export micrographics equipment to the Middle East, where none of the manufacturers of the equipment seemed to want to go.

But it attracted attention last year when it took over the development of the 10-year-old unsuccessful Ovonic updatable microfilm camera from its inventor Stanford Ovshinsky and his company Evergy Conversion Devices.

It set up in the UK because, according to UK managing director Vic Randell, UK investors are more interested in funding export-based operations than are their US counterparts and because the UK is handier for the Middle East as a supply base.

About £400,000 of the £1.3 million raised has been earmarked for setting up development and production facilities for Ovonic film based systems.

Randell says that a factory will open in Telford next month and that production planned next April.

The Ovonic system is important to the company's future, he says, because its flexibility will enable it to form the basis of systems applicable to a far wider market, computer-aided draughting being one major potential application to which microfilm in its conventional form is unsuited.

RANDELL ... "UK is handier for Middle East."

But even without the Ovonic system Randell reckons the company has a good opportunity for growth.

"If we got up to $25 million a year turnover in about four years without the Ovonic Products, we would have achieved the niche we want," he said.

The company's bread and butter work will continue to be based on other companies' products, and it intends increasingly to specialise in systems integration work.

Optimistic Tycom gets cash for advertising

by Philip Hunter

THE fate of Osborne shows that there is much more to business than just having a good product.

Tycom Corporation, one of the UK's strongest micro makers, is determined to follow this maxim, and has lifted another £500,000 from its investors, which include County Bank, the National Westminster's Merchant Bank.

"Too many people go bust because they don't think of future money," elaborates marketing manager Ian Collins.

Most of the company's research has been done, and the new money will simply keep up a healthy head of cash for marketing the main product, the Microframe computer.

Comments managing director Allen Timpany: "This funding completes our planned 1983 investment, and is primarily designed to fuel expansion and consolidate the UK business."

The company began 1983 with the boast that it would sell 10,000 Microframe computers this year. This figure has never looked likely – it will be around 2,500.

But Timpany claims that UK sales are on target, which indicates that the company had a second, more realistic sales goal.

Tycom is spending on ambitious advertising.

The company is offering a free IBM, DEC, ICL, Sirius or Apple micro to anyone who can prove that one of these machines can outperform the Microframe according to set criteria.

But Tycom knows it is unlikely to have to give away a machine made by one of its big rivals. This is because only the Microframe satisfies one of the rules laid down in the advertisement, of being a single user computer which can be expanded to take six users.

Telemetrix aims for a full listing

by Philip Hunter

GRAPHICS terminal specialist Telemetrix is wasting no time cashing in on its first five year trading record.

The company is taking a full Stock Exchange listing, and hopes to raise £9.7 million for continued growth in the market for computer aided design terminals.

Marketing director David Lade says there was no point joining the Unlisted Securities Market (USM), which is in effect a second division of the stock exchange, giving young companies without a long record of financial growth cheaper and easier entry to the market.

Companies can sometimes join the USM on the basis of a strong product alone, but there has to be a solid five year trading record for a full listing.

Telemetrix scores well on this reckoning with turnover up from £65,000 in its first nine months of 1979 to £5.8 million in the year ending June 30, 1983.

Profits are up from £17,000 to £1.6 million in the same period, and the forecast is £3.2 million for year ending June, 1984. Only in 1982 did profits drop slightly.

Telemetrix made 91% of last year's turnover on sales of CAD/CAMS graphics terminals, which are developed and distributed by its subsidiary Westward Micro Systems.

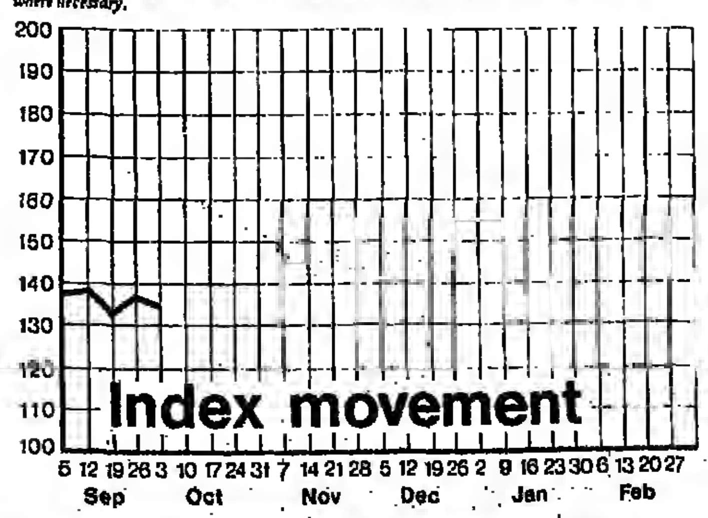
SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Date 30/9/83 Index 124.01 Change -2.26

Pence 1983 High	Pence 1983 Low	London Stock Exchange Stock	Pence Price	Pence C'nge	$ 1983 High	$ 1983 Low	US Stock	$ Price	$ C'nge
326	298	Abingworth (10p)	283	-15	20	18¼	Amdahl	19	–
545	240	ACT (App Com) (25p)	381	-53	60	33¾	Apple Inc	23¼	-9¼
55	41	B. Dov Kent (25p)	33	+3	50	34¾	Auto Data Pro	38¾	-1
183	124	Chubb (20p)	142	–	87¼	43¼	Burroughs	53¾	-1⅛
178	120	Cole Group (25p)	122	–	16	7½	Comp Auto	7½	-⅛
368	182	CASE (20p)	288	+1	23	17	Comp Sciences	17⅝	+¾
665	540	De La Rue (25p)	570	-8	14¼	9½	Comshare	11¼	–
375	284	Extel (25p)	300	-3	63½	38¾	Control Data	51	-1
668	411	Ferranti (50p)	591	-8	51	27¼	Cray Research	44	-2
248	188	GEC (5p)	189	-7	81¾	41	Data General	38¾	-3
87	58	ICL (25p)	80	-3	26½	18¼	Datapoint	26½	+¼
63	41	Kalamazoo (10p)	58	-2	127⅝	95	Digital Equip	104½	-3⅝
375	275	Koda Int (25p)	330	–	40½	13½	Elec Data Sys	39⅝	+3
525	270	Memec (10p)	510	-10	15⅝	5¼	Gen Automation	11¼	-⅜
180	120	Muirhead (25p)	116	+10	43¾	18¾	Gould	32	-1⅜
890	468	N'market (1981) (80 05)	870	-5	81	38¾	Harris	38¾	+½
2700	887	Norsk Data	2330	-67	48	27	Hewlett-Packard	41	-2⅝
320	207	Office & Elect (25p)	225	-8	120	85	Honeywell	121½	-1⅛
1735	110	Philips Lamp (F1 10)	1060	–	44¼	20¼	Intel	43½	+⅛
255	179	Plessey (25p)	212	–	175	95½	IBM	128	+3½
50	18	Quest Auto (10p)	20	-2	11⅞	34½	Litton Ind.	84½	-1
287	200	Racal Elect (25p)	200	-8	17¾	12¼	MDS (Mohawk D)	14	+⅛
320	225	Stat Comp (10p)	280	-10	32⅝	18	MSA (Mgmnt Sci)	31	+1⅜
610	275	Systems Des (10p)	480	–	16½	9⅛	Mngmnt Assist	11¼	+½
610	418	Thorn-EMI (25p)	505	+4	15	9½	Modular	13¾	-½
177	135	UCAT (50p)	141	-3	145	84½	Motorola	142	-1½
167	130	United Leasing (20p)	160	+3	57	26¼	National Semi	54⅛	+¼
		Unlisted Securities			121	61½	NCR	120⅞	-¼
115	75	Bus Comp (10p)	80	–	35½	24	Perkin-Elmer	25¼	+¼
130	87	CPU (5p)	110	+8	20½	18	Prime	11½	-1
150	115	Crfer (10p)	143	-2	55⅝	44½	Raytheon	47¼	-1¼
510	145	Consult (C&F) (10p)	415	-95	31½	26¼	Signal	35½	-1½
275	181	Feedback (10p)	270	-2	48¼	33½	Sperry Comp	45⅛	+¼
314	142	Imm Bus Sys (10p)	142	-8	24½	18	Storage Tech	20	-¾
210	158	Int'europe Tech (20p)	210	–	38⅛	24⅝	Tandem	38½	–
94	27	J.S.D. (5p)	30	+4	62¼	37⅝	Tandy	35¾	-8
85	70	M.M.L. (5p)	80	–	111	108⅝	Texas Inst	114	-2½
300	160	Memory Comp (IR10p)	285	–	25½	15½	Tymshare	21	-¾
500	208	Micro Bus (10p)	500	–	40⅛	31¼	Wang Lab B	34¼	–
640	265	Micro Focus (10p)	535	-8	11	8½	Wyly	12¾	+½
445	310	Microgen (10p)	415	–					
273	135	Miles 33 (10p)	273	+5					
84	51	Mnemos (10p)	51	-1					
240	158	NMW (£1)	225	-15					
210	170	Real Time (5p)	210	–					
120	81	Rolfe & Nolan (10p)	114	+1					
181	110	ScanData (10p)	140	-8					
85	76	Tech for Business (10p)	80	–					
90	63	Trident Comp (10p)	87	–					
107	85	Zygal Dyn (5p)	90	-2					

The table shows the closing prices in London on Friday and in America on Thursday. The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



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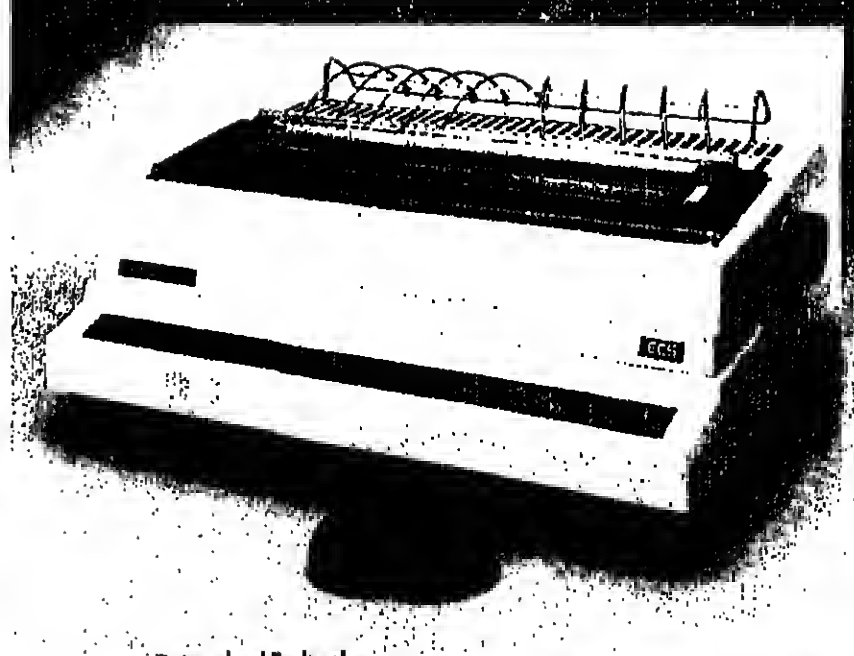

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SOFTWARE FILE

IBM adds another package to its PC

by Claire Gooding

IBM HAS added another candidate to its approved range of accounting systems for its Personal Computer. The General Accounting package comes from US software house BPI International and is aimed at small businesses which need a versatile system to deal with sales and purchase ledgers, VAT and balance sheets.

The system joins Peachtree's accounting package, with which it will be in direct competition, although both are under the IBM label. General Accounting sells for £351 and Peachtree's package for £350 a module. There are five modules.

"General Accounting is sold as an entry-level product in the US," said Michael Hunt, UK managing director of Peachtree's parent, MSA. "Obviously it will take some business from us, but IBM will price it according to its capabilities. If price is a consideration buyers will look at General Accounting, if not they'll look at functional capability."

HUNT . . . "Obviously it will take some business from us."

IBM has made considerable adjustments in the package to suit the UK market. Terminology and documentation standards have been Anglicised and UK formats used for profit and loss accounting, VAT, and accounting periods.

Other adaptations have allowed the package to cope with multiple bank access and auxiliary tables for UK-specific factors such as tax.

Express stops at Slough

by Keith Holder

A DECISION support system used by 25% of the top 1,000 companies in the US is coming to Britain.

Management Decision Systems, developer of the Express system, is setting up shop in Slough and will offer standalone systems, networking and support.

The IBM compatible modelling system is designed for managers in business planning and policy and uses a "plain English" format to encourage use.

It has been selling steadily in the US for 10 years, particularly to large banking houses and corporations, including Atari, Westinghouse and Xerox.

New additions to Express include a link which allows an IBM PC to be used as a workstation via a mainframe interconnect called Express-Mate. An integrated package gives users access to the Lotus Development "1-2-3" data base management, and graphics software is designed to widen market appeal.

Costs for these are £330 and £395 respectively.

This will compete with other multi-dimensional modelling systems like the MSA Peachpack and EPS Consultants' FCS and supports the growing trend to combine the friendly face of the desktop micro with the raw power of the mainframe.

Although developed to run on IBM machines, an agreement has been reached with Prime Computer to supply standalone turnkey systems in the UK.

A third alternative is ... ing, and reports from ... users say that the cost ... by improved support and ...

The decision to establ... base "ties in with ... acceptance by manage... large companies of this ... technique," said Roderi... managing director of the ... site. "This is because of the ... feration of micros, which ... away a lot of the fear ... with computers. Once ... began to see how these ... they also realised their ... and began to look ... systems to solve their pro...

There are four UK ... sent though White is ... that this will rise to 10 ... next year. He admits ... will be stiff competition ... market but said that ... competition's products ... tegrated or flexible.

Whatever the technicalit... Express, it is a more ... system. Typical entry level ... around £30,000 and a ... system could increase this ... £150,000 mark. FCS by ... son starts at around £1,... limited version suitable ... standalone micro system ... £40,000 for the range's top ...

Already aware of the ... threat to sales, FCS has be... veloping a new time series ... similar to Express. A spo... for the company said that ... reached the demonstratio... and could be launched in ...

Software File is compiled by George Black

Prime signs Delta for IBM battle

by Claire Gooding

THE Delta applications generator has been signed up in the push by minicomputer manufacturer Prime to "surround" IBM kit. Prime has been expanding its software offerings for some time as part of its plans to beef up its marketing in the UK.

Delta, from Delta Software Tools, is a highly adaptable system which is capable of producing software on its host machine for a target system of a totally different make and operating system.

It is said to automate software production so that coding is reduced by more than 70% and the entire systems development effort by as much as 50%.

Delta has been used extensively on mainframe sites and by software companies in large conversion tasks, and one of Prime's motives in adopting the system is that it will enable Prime kit to become more versatile.

The joint marketing agreement applies specifically to Prime's entry level machine, the Series 50. The Delta product was originally developed on Prime kit but it has taken a long time for Prime to recognise its significance.

Delta will be used to develop mainframe software on the entry level 2250, to relieve the load on the mainframe and supply a cheaper alternative to expanding the mainframe.

"Everybody complains about programmer productivity," said Bob Brooks, managing director of Delta Software Tools, "but a lot of installations have to struggle along with one terminal maybe shared between 10 programmers.

"One of the benefits of combining Delta with Prime kit is that it provides a more responsive development system, where each programmer can have a terminal on the desk."

Brook believes that the ideal of taking software development off the mainframe and on to Prime will be very attractive to many installations because of Prime's extensive networking and terminal support capability.

Delta Software Tools will be providing the support for the system from its London office. The price for a basic Delta licence is around £25,000, depending on the number of terminals.

Harris takes the Oracle

SUPERMINI manufacturer Harris is the latest to adopt the Oracle database for its machines. Oracle is one of the first relational databases to win wide acceptance among manufacturers in much the same way that the Cincom Total permeated through the hardware scene in the 1960s and 1970s.

The system uses the IBM query language SQL/DS as its user interface, uses data dictionary storage in which tables can be added to or deleted without affecting applications and is written in the Unix language C.

The database works under the VOS operating system and costs £28,500.

ADA

Michael Pickett, senior Ada consultant at the CAP group, begins a monthly series about Ada developments

Ada's critics should not go unheeded

ADA shouldn't have been invented. It's a widely held view, and there are many who would seek to justify it by pointing out the deficiencies of its various features; their presentation; the complexity of using them and the dangers inherent in their use. Sometimes alternative solutions are proposed for particular features or for the language as a whole.

This is all to the good. Not one word of it must go unheeded. Future language designers, take note, just as the designers of Ada took note of the strengths and weaknesses of earlier languages.

The invention of Ada was probably the only way to pull together current thinking on programming language design from researchers and practitioners around the world.

Ada is the reification of many ideas. It was necessary if only to provide a solid basis for future progress, and much of the current criticism shows that at least it is serving that role well.

Moreover, its implementation is providing a vehicle for the evaluation of what might otherwise have remained academic hobby horses. No longer is there any excuse to conjecture the merits or otherwise of, say, strong typing. Many programmers will be using it. Go out and measure it, then if it's good, put it in the next language; if not, don't.

Without Ada, there would have been many more debates, which might have continued interminably. Even with Ada, and the opportunity to observe its use in practice, debates will continue and the evidence will be disputed. Hence there will continue to be ammunition for those who claim that Ada should not have been invented until the issues had been resolved.

Probably one of the most serious objections of this type comes from methodologists. The argument is that the greatest contribution that thinking man can make to programming is to instil order and method.

This is where the effort is needed. Develop the right method, and when it is known what is the right way to write programs, then, and only then, invent the language to support the method.

Programming methodology has made great strides in recent years, but it would be wrong to suggest it is a new thing. Even in the early days there were those who were acutely aware of the limitations of whizz-kid programming and sought reliable ways to develop larger systems. Serious and embarrassing failures taught much to many and added greater impetus to the search for a reliable method. Now there are as many methods as programming languages, and as much debate about their attributes.

The need for a reliable, usable program development method is beyond dispute, but to delay the development of the programming language until such a method is developed is unthinkable. On the contrary, as was shown by the study by the Augusta consortium in conjunction with the DoTI, Ada and many existing methods are quite compatible – more compatible than Ada's critics suggest.

When attitudes to support tools for Ada are examined, a parallel phenomenon can be observed. The argument is that the language cannot reasonably be used until it is fully equipped with a comprehensive support environment, APSE, because the nature of Ada and the projects in which it will be used demand such an environment. So, it is suggested, there is little point in bothering about Ada until comprehensive APSEs are available. Indeed, any release of a compiler without its embedding APSE is little more than opportunism.

It was man the toolmaker who achieved ascendancy over the beasts and the tool of APSE is a very powerful one. It provides for an open-ended kit but suggests the need for at least a minimal set of tools, the whole being integrated around a kernel which provides common interfaces and services.

But APSE is a concept in its own right: although it owes its origins to the Ada effort, it is more applicable to the development of large systems with any language, rather than to Ada specifically.

The development of a comprehensive, fully integrated APSE in the true spirit of Stoneman is a large and expensive undertaking. Availability is still some way ahead. Although the concept allows for the minimal tool set, known as MAPSE, it is to be expected that such tools are also likely to have minimal functionality. To tie the use of Ada too tightly to the availability of an APSE, is to neglect the opportunities provided by Ada now.

The use of an APSE with Ada is not essential. There already exist programming development environments – some proprietary to particular computer manufacturers, some not – which provide more than the minimal set of tools. What is more, they have been broken in by the current user base. Ada compilers are now appearing hosted on these propriet... ronments, and now is th... make use of these compi...

PICKETT

Once Ada is in use ... organisation, it becomes ... to identify what additi... support is needed. It is ... tools are developed ... considerations arise. If ... intention of the organisat... tually to migrate to an APSE ... it must ensure that any ... introduces are also sup... within the intended APSE.

It makes sense to start ... now and to develop the ... they are needed, not to ... fully fledged APSE.

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PLATFORM

Doug Gorman is group director of CMG Computer Management Group

Golden rule for 'soft' survival

CREDITORS of software house Allergo, which ceased trading in April, met last Wednesday hoping for an insight into why such a leading organisation ended up with unpayable debts that were reported as exceeding £400,000.

This is not the only major software house to come to grief recently, and industry watchers are asking an obvious question: Why do apparently prosperous companies fail?

Probably the full story will never be told, but I suspect that, in common with any commercial venture, the roots of the problem can be found in poor financial control and the failure to apply one golden rule: that of making sure all work carried out is realistically charged for.

In the final analysis it all comes down to making a profit, for profit means the difference between staying in business and ending up in the hands of the Official Receiver.

Profits need not be spectacular, but they do need to be consistent – which can be achieved through a combination of a number of factors that can sensibly be applied by any organisation in the computing service industry.

Regardless of industry or area of specialisation, it is important not to have all your eggs in one basket. In other words, create and maintain as wide a customer base as possible. So if one – or dozens – move on, the company is not threatened by a substantial drop in revenue. At CMG we have about 5,000 customers throughout Europe.

Do not jump on the technology bandwagon. There is no point in offering solutions looking for problems. Put new technological developments under the microscope and ask how they can be applied to business needs, to solve business problems. What is the point, for example, of having an all-singing, all-dancing package if no one wants to buy it?

Making a profit also means making sure you set the right price for a product or service and know what every job is costing to complete, which in turn means using a first class costing and monitoring system, through which you can make sure customers are being billed enough.

This is a case of "physician heal thyself" in the computing industry. I am amazed at how few suppliers of computer systems actually use their own products to aid their business operation.

And once the job is completed, get the invoice out quickly, ideally within a day of completion, and again through a computerised system. The faster you get the bills out, the faster you should get the money in.

The book-keeping and cash collection system should be equally as good, even to the point of laying down rules which say that clients that do not pay do not get served the next time. Remember you are not in the banking business. Late payments costs money in interest charges. The ideal credit period is 30 days, but we achieve a fairly respectable average of 42 days.

"Credit creep", where unpaid invoices gradually get to 60, 90, 120 days and over – a common occurrence in times of recession – should be avoided at all costs. Perhaps we are fortunate here in that over half of CMG's group revenue comes from Continental Europe where credit arrangements are much more strict.

Avoid letting external investors into the organisation. Even if they have a minority shareholding they will want to influence the business, despite the fact that they may have little or no knowledge of the computing industry and its constraints. They may be more interested in short-term performance and the effect on dividend rather than in building a stable and expanding operation.

If you decide to grow through acquisition, choose very carefully. We look for organisations that may well be financially weak, but they must otherwise be reasonably stable and we expect to see them turning in a profit within three years. We thought, for example, that we might have lost 50% of customers at Incomputer but in reality the loss was marginal.

When we took over the company was losing money but it has now been turned round. This year it will break even and in 1984 will contribute to group profits.

Here, the investment needed was not so much financial but rather more of an investment in management.

It all sounds remarkably sensible, doesn't it? But consider for a moment whether your own organisation can honestly say that it applies all the criteria outlined. And then ask yourself whether any organisation that wants to stay in business can these days afford not to take financial control seriously.

Doug Gorman

10 YEARS AGO

FROM COMPUTER WEEKLY OF OCTOBER 4, 1973: First winner of the John Player Computing Award was Professor Tom Kilburn, professor of computer science at Manchester University . . . Peripheral manufacturer Memorex would not be bailed out of its financial difficulties by Control Data, following a breakdown of negotiations . . . It was reported that the magnetic bubble memory would become commercially available by 1976, selling at a cost of about 0.05p per bit initially . . . The 1,000th installation of Librarian, a retrieval and maintenance system for IBM 360 and 370 source programs, was announced.

PROFILE

The volunteer who gets IT across to the public

ARRICK WILKINSON remembers 1968 as "the year all my problems started". His wife was asked to join the committee of the Glasgow branch of the British Computer Society.

She got out of it by nominating her husband instead.

Since then Wilkinson has been branch chairman, BCS graduate and student affairs committee chairman, a member of the BCS awards panel and an the membership committee and council. He has been chairman of the Digital Equipment UK users association, Decus, since 1978, and European chairman for the last three years.

He has also chaired a society which raised £300,000 to renovate an ancient granary and turn it into

by John Kavanagh

a theatre and crafts centre. And he sits on the Association of Arts Centres in Scotland.

All this work is voluntary. Between meetings he manages to fit in a full-time job as computer manager in Glasgow University's natural philosophy, or physics, department. He runs a DEC Vax-11/780 and is responsible for several PDP-11/23s used for data acquisition.

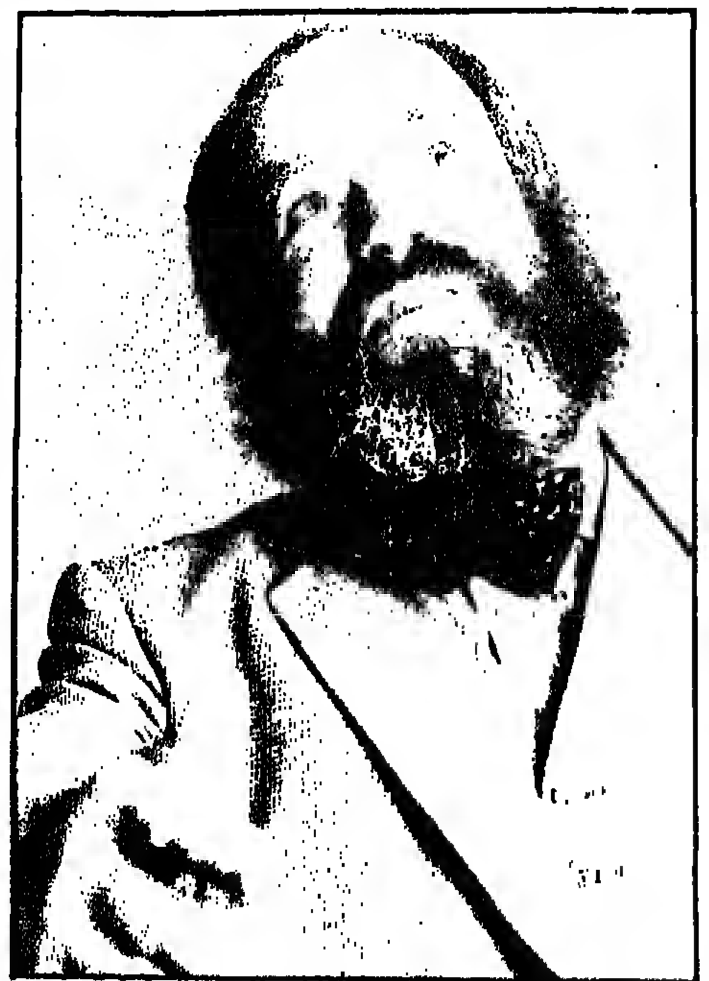
Wilkinson is walking proof that meeting people broadens the mind. Through all these activities, which demand a meeting a week on the computing side alone, he has sorted out firm views on the industry.

One of his hobbyhorses is the need to promote public awareness of information technology.

"Blaming things on the computer is the best excuse in the world," he says. "It fobs off any member of the public.

"There's a danger that people will believe what the computer says without questioning it. But they don't have to accept it just because it's printed on green-lined paper.

"People must be computing literate as well as maths literate. The government says all the right words – but words cost nothing.



WILKINSON . . . "Blaming things on the computer is the best excuse."

It's now paying regional co-ordinators £25,000 to keep the Information Technology Year impetus going. That means it's all down to volunteers again. I'm a great believer in voluntary effort – but if you're putting in your own time you want to see some results. If the £25,000 is supposed to be government pump-priming, it's certainly not enough to keep the pump running."

Wilkinson himself is someone who benefited from a sudden awareness of computing. He went to Glasgow University in the late Sixties to do a mathematics degree course but discovered the computer, an ICL KDF9. "Computing was a lot more interesting," he says.

When he finished his course he joined the new computing science department as a demonstrator and programmer. He did that for three years until the natural philosophy department got its own DECsystem-10 and wanted someone to take charge of it. He has been there ever since.

But again government funding comes to the fore. His two staff have left to go into industry and there are no takers for the jobs. "There just isn't enough money to attract people from industry," he says. The staff are urgently needed because this year the department is starting its own computer science course for 200.

Despite his comments on funding Wilkinson has not left for industry himself, partly because university life gives him more freedom for his BCS, Decus and other voluntary work.

"They're happy for me to go," he says. "They still remember the early days, when the machine went down every time I was there and ran smoothly whenever I was away. That's because I was doing all the development work, putting more strain on the system."

Wilkinson lives seven miles from his work, in a village near Stratheaven. Some 10 years ago an arts guild was started there and two years later it bought an old granary. Wilkinson later became chairman of the guild as it raised £300,000 from sources ranging from jumble sales to the local council. The money turned the granary into a theatre, exhibition gallery, clubroom and craft workshop.

Wilkinson still helps: "I'm no artist and I can't sing so I tend to do the lighting or serve in the bar or act as front-of-house manager," he says.

But his work with Decus and the BCS has forced him to take a less active role in the guild.

His involvement with Decus came in a similarly indirect way to that of his BCS work. He was able to get to the inaugural meeting of Decus in the UK in 1976 and was voted on to the council the same. Three years later he became chairman and he has been re-elected every year since. He has been on Decus' European board since 1978 and has just completed three years as European chairman.

He is equally committed to the BCS. "I'm typical of many members," he says. "I was very keen to learn about computing at university but since then I've had little formal education. With the BCS I can keep up with changing technologies and methods: there's a high cross-fertilisation of ideas between members and groups."

DOWNTIME

Time gents please!

READERS will be aware of my hatred of computers out of hours. These little horrors crop up everywhere these days and generally "improve" the quality of life by several negative orders of magnitude.

Talking cars and vending machines, no-hope rock bands appearing on *Top of the Pops* as microchips produce identikit music for them, and computerised switchboards that play muzak at you at the drop of a hat – are all to be despised.

But new levels of beaurocratised depravity will have been plumbed when a device known as Robo Till hits the streets soon. Robo Till is designed to monitor beer lines and optics in hotels and pubs and to deliver exact measures and prices.

The one remaining quality of life which still exists, at least in the Dog and Bucket, my local, is that George the landlord gives a generous half to his regulars. The advent of the repellent Robo Till will put a stop to all that.

Cheers.

"Don't argue with me Fred, the computer says you've had enough."

Stranger than fiction

ICL has a propensity for employing persons possessed of strange and eldritch names. Not for ICL are the Fred Smiths of this world. Outgoing chairman Christopher Laidlaw is a prime example – or instead of er? A dyslexic registrar of births perhaps?

And new boy *Michael Edwardes* is another. The extra *e* in his name is guaranteed to confuse typesetters at *The Guardian*. And let us not forget the managing director, Robb Wilmot. How many mutts have two t's at the end of their name, and the majority of Roberts only the one b in the abbreviated version.

It's lucky that Robbo brought a good supply of *Speak & Spell* with him from Texas Instruments.

The wit of Brian Oakley

BRIAN Oakley, director of the Alvey Programme, is establishing a reputation for his wit. At the Computing Services Association quarterly luncheon last week he said we will go "giggling into the sea" if we don't meet the challenge of the Japanese Fifth Generation.

His assessment of the Japanese and the British approach to problems showed the same spark: when the Japanese agree on a plan, they can all face in the same direction to solve the problem; the UK may agree on the plan, but then they go in the same direction they're going to go in anyway.

And Mrs Thatcher thinks the Alvey Programme is being run by one man and a girl. "I'm not," said Oakley, "she thinks I'm the girl."

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, October 6, 1983

Will Michie raise research morale?

A NATIONAL information technology research centre, along the lines of the Japanese Institute for New Generation Computer Technology, is long overdue in the UK, and Donald Michie is to be congratulated for getting together with the industry to set one up independently.

No doubt future governments will hold the Turing Institute up as a commendable example of British enterprise in the future, conveniently forgetting that it has been its past incompetence and the failure to respond to the drain of resources to the US that has made the initiative necessary.

Will the Turing Institute attract back the "lost generation" of British computer scientists who are now in the US, and who are so vital to our future? Michie believes that a "free and stimulating atmosphere" is more important to the scientific mind than money and equipment – but is this really true now in this current economic climate?

There is an old school belief, still held by some in universities and in government departments that hardship and deprivation provide a useful forcing ground for bright ideas. However true that may have been in the past, it certainly is not so today.

In the past, a stimulating atmosphere could carry a researcher through wretched conditions because he knew that there would be a secure university position eventually. That prospect simply cannot be relied upon today

The government's IT lectureships may have been designed to attract exiles back to the UK, but reports suggest that welcome though they are, the new posts have been introduced, with no concomitant increase in facilities.

We will only be able to compete in IT by spending money. It cannot be achieved on the cheap. Ultimately, it does not matter so much if Michie cannot persuade exiles back; what is more important now is that he can create an environment which discourages his researchers from becoming exiles.

The software saviour

WHILE all eyes look to the Alvey Programme to ensure a future for the UK in world technology markets, the Software Products Scheme could prove to be the real giant-killer.

Information Technology Minister Kenneth Baker meets this week to decide the future of the Software Products Scheme. The value of projects looking for support have been running at £500,000 per working day – that is over £100 million a year. Not all, of course, will get the one-third government backing the Software Products Scheme allows for. But there is no doubt that the UK software industry is not short of ideas.

It is likely that the government will increase the funding for the Software Products Scheme, since it falls in line with its objective of supporting the sunrise industries and the service industries. Where increased funding will come from is another question; "new" money is not a concept the Treasury seems very comfortable with.

The need for the government to back innovative ideas in the software industry cannot be under emphasised. Four out of five ideas for software developments may fall by the wayside, but if all five are not backed, the fifth will not see the light of day.

The Software Products Scheme started 11 years ago, with original funding of £250,000 per year for two years. Kenneth Baker must take the credit for reviving the scheme, and it must be hoped that his association with it will not prejudice further funding.

Earlier this month the new Trade and Industry Secretary, Cecil Parkinson, told a meeting of the Scottish Confederation of British Industry that the launching of new initiatives for their own sake must be rejected. There are those who see that as a small knife in Baker's back, whose exploits during IT Year had too high a profile for some politicians.

That being said, Baker has done a lot for the IT industry. If he succeeds in carving out more money for the Software Products Scheme, there will be many who will give him a loud hurrah.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Julian Templeman, of South Kensington, London, who wins £5.

So changes were made, in 1971 our money went decimal and other units of measure have gradually followed suit. All are now based on units of ten, the language of computers.

Epsom Leisure

LETTERS

Facts about non-impact printers

I WAS impressed by the intention behind the article (*Computer Weekly*, September 1) which strove to give the printer its rightful place in importance as a microcomputer peripheral. All too often is the decision on the type of printer to purchase made at the last minute with little thought to matching the printer to the job in hand.

It was therefore with disappointment that I read a scanty two-paragraph entry on non-impact printing (of which thermal printing is one option) which, to compound the sadness of its brevity, was completely misinformed.

Non-impact printers feature largely in today's home and small business computer market as they are relatively inexpensive, require minimal maintenance due to their lack of mechanical moving parts and are quiet. There are many types of non-impact printer on the market but thermal and electro-sensitive systems are by far the most popular with the lower overall cost and more efficient thermal systems striving ahead.

I should set the record straight in terms of what these two non-impact printer systems are, as your explanation was incorrect.

Thermal print systems work almost totally these days in conjunction with chemical thermal paper, now universally known as thermal paper. This is a white, wood free base paper coated with a chemical formulation designed to produce the correct dot matrix image on contact with the heated thermal printhead. The system is efficient for what is intended, which is a readable hard copy at low cost and for fairly low volumes. Thermal printers are normally 20- or 40-column for home computer use or 80-column for business use.

Electro-sensitive or metallised printers, as the small computer type is sometimes known, are made up of an aluminium top coating over a black carbon underlay. Many old EST printers were of the "burn-off" type that you describe, but today's printers, of which the Sinclair is one example, work on the principle of "volatalising" the top coat to reveal the required image. This process no longer is associated with the unpleasant odour of the old burn-off process.

These types of non-impact printers are not intended to compete with the much higher quality and faster speed dot matrix impact or daisywheel.

That their significance for microcomputer users has been missed by your feature is a sad reflection of the lack of attention the OEMs seem to give them.

(Miss) M. T. WATSON
Special Products Manager
Roltech,
Cambridge.

Plea for help with interfacing directory

AS a freelance journalist in the graphic arts field I specialise in front-end systems. During research for articles I have been surprised to see just how many people are involved in interfacing alien computers (from micros to mainframes) and word processors to their own typesetting front-end systems.

Because of the level of interest I plan to produce a directory of those involved, both manufacturers/agents and end users.

I would like to hear from any of your readers who are involved in the field, especially those concerned with modems, disc readers, media converters, data retrieval devices and interface boards.

COLIN COHEN
8 Lansdowne Crescent
London W11 2NH.

Air freight system for IBM

I READ with interest your article (*Computer Weekly*, September 15) on the air freight system which is being developed by CMG for IBM 34 and 36 computer systems.

I should like to put the record straight on this market, as FDS has over the last three years developed and installed a total freight forwarding system for the air and surface freight market. This system, called Transfact, is used by over 40 organisations worldwide and offers a comprehensive operations and accounting environment.

The system has been developed on Prime Information to offer a range of turnkey systems typically from £60K to £300K dependent on the number of terminals implemented.

The latest developments of the IBM PC have also led to a compatible implementation on the Revelation Pick-compatible PC which brings the entry level system down to about £15,000, while also offering significant networking capability.

PAUL WOODHOUSE
Director
FDS,
Braintree, Essex.

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WORKPLACE

Checkmate for chess champions

CHESS mastery was regarded as one of the highest accolades of the intellect – until computers started playing the game so well. Now it has sunk to the intellectual level of noughts and crosses in our imagination, a game computers can play as well as, or better, than we can.

The latest blow for computer chess was struck last month at Munich when world champion Anatoly Karpov was held to a draw by a mere chess machine costing just £258, the Mephisto III.

Karpov admittedly was playing 20 other games at the same time, and even world champions can slip up in such conditions. But the development is still significant because until recently it has taken powerful mainframes to play chess at a level likely to give Karpov cause to ponder.

Until 1979 chess international master David Levy, one of the world's leading authorities on computer chess, had not been beaten by a machine. Since then he has been beaten twice, and now for the first time it looks as if there are dedicated chess-playing computers at affordable prices capable of besting chess masters.

The most surprising outcome is that philosophers now say we must revise our beliefs in the nature of human intelligence.

We should not esteem chess masters, they say, because all they are doing is to check a range of possible options and picking the highest option most likely to succeed. Instead we should admire the more common ability to pick chess pieces out of a box and set up the board.

This argument unfortunately melts in the heat of the facts. Computers use a different method to play chess, involving an exhaustive search of the next few sets of possible moves. There is a little more to it than that, but not much.

People, or chess masters anyway, use a much more subtle approach that involves pattern recognition. There is no need to keep on re-checking combinations of moves, and the game is a slowly unfolding drama with new ideas mingling with a longer term plan.

In this sense chess is typical of many human activities. Only because there are a few rules and clearly defined domain can computers do it as well.

Open plan may not be the way to programmer productivity.

Programmers' private world

THE trend toward open plan offices could be reversed by a recent US experiment in programmer productivity. TRW, which produces 10 million lines of code a year, moved 35 of its programmers into small soundproofed private rooms without windows, but well loaded with expensive computing facilities.

Productivity soared by 40% in the first year of the experiment.

The company was surprised by the reason the programmers gave for their better performance: simply that they found the quiet, privacy and comfort conducive to grinding out the code.

I am not surprised. The conventional wisdom is that people work better in open offices. But programmers are a breed apart. Many of them resent any interruption during a hard debugging session at the terminal, and some feel inhibited by a large human presence around them.

And anyway, if the only windows on the world is a VDU, you will look at it.

Micros take star role on Saturdays

CENTRAL TV has already fall in its first attempt to broadcast live program on its Saturday Show. But undaunted producer Tommy Boyd has an ambitious plan to upstage the BBC by introducing his 2½ million viewers to interactive computing.

The first part of the plan is to give some viewers a modem to link put data from their own home computer into a games program held on Central's computer. Other viewers will meanwhile look on in amazement.

There is no reason why the should not work. The idea of the modem is, after all, old hat. The lucky viewer just attaches the modem to a home computer at one end, plugs it into a telephone outlet other, then dials the number given by Central to hook up to its computer, and feeds in data following instructions given on the program.

No problem? Unfortunately these things rarely work first time.

But Boyd intends to test the show gradually into the experiment, introducing more advanced techniques each week during November and December.

The most interesting part of the experiment will come later when the programme will invite viewers to control a robot in the studio from their home computers, via the modem.

"We might have a game to get people to move the robot round the floor and pick up and drink a cup of tea," Boyd says.

This could be the first move toward the science fiction dream of having a robot take your hobbies for you. Rather than going to the trouble of booking a holiday in an overcrowded, polluted sun-baked beach, you would bask in comfort in your own solarium while the robot fed back pictures of the scene through its vision system.

There would be a world network of robots to be hired like cars to give people the holiday experience of their choice without having to stir from their armchairs.

But meanwhile Central TV has had a few teething troubles. The first attempt on the Saturday Show to transmit a whole live program failed because of interference picked up from the mains electricity in the studio.

Boyd claims this was the first attempt in the UK to broadcast a large program direct from a computer. The BBC have had to make a tape first and then broadcast, he says.

Hair splitting this may be, for there can be no denying Boyd's determination to make computers the stars of his show. "It might be a dull area of TV," he admits, "but it might be a whole new game show."

"Appleby's doing his bit for boosting Britain's exports of software – he's emigrating."

Third party service is 'failing'

by Keith Holder

THIRD party field service organisations are failing to get their message across to potential users, despite their increased capability, says a report from Input, *Developing User Acceptance of New Service Techniques.*

Bad communications and poor use of marketing techniques are blamed for the disappointing impact on the UK and European markets and the report looks at how this can be remedied.

Doug Eyelons, director-general of the Computing Services Association, thinks the report is on target and comments: "I would strongly endorse what it says. There is a huge expansion potential in the market."

He doesn't think poor marketing is the only thing to blame. "There is also a credibility and educational deficiency to overcome," he commented. "The problem is how to show the data processing manager that services from third party organisations can be just as good as those offered by the original manufacturer."

The report examines the strengths and weaknesses of remote diagnostics, central despatch, carry-in service, mail-in service and customer assisted maintenance and analyses users' responses and suggestions for improvements.

Not everyone has been oblivious to these problems, or slow to react. Systems Maintenance and Services has already appointed a public relations agent to promote its services to potential customers. European marketing director Stuart Peel feels that "third party organisations need to strengthen marketing and aggressiveness."

The CSA has just completed its own survey of this market and concludes that growth potential is on the increase. One major factor influencing this is the growth in use of microcomputers in business. In this situation it is common to have peripherals from a number of manufacturers, making third party service more attractive.

EYEIONS . . . Huge expansion potential for field service.

University brings telecomms to the world's hungry belt

by Thomas Land

THE University of the West Indies is installing a satellite-based duo teleconference system to broaden its medical, farm advisory and educational services to its campuses and extension centres throughout the island nations of the Caribbean. Brazil's Federal University of Rio Grande do Sol has designed its own teleconference system.

A meeting of specialists from many countries and international organisations decided that teleconferencing is an essential development tool for the hungry belt of the globe.

The system comprises a combination of telecommunications and computer technology linking large numbers of geographically dispersed individuals and communities. Conferences lasting several months can be held in this way, and specialists can take part in several of them simultaneously without leaving their desks, laboratories or surgeries.

The system offers considerable savings since telecommunications are incomparably cheaper than travel.

The basic principle of teleconferencing is increasingly exploited in the rich world for such commercial purposes as the movement of funds and data. A paper recently published by the United Nations in Geneva cautions poor countries that many of them "may find themselves effectively cut off from modern scientific communications in the future" unless they participate in the present, still early development of teleconference networks.

Hence the urgency of the pilot teleconference projects mounted in the West Indies and Brazil. The system holds out a promise of solution to many obstacles hindering research as well as higher education, arising from the lack of proper communication facilities in the developing regions.

The West Indian system is expected to be operational later this year. It will initially link the university's three main campuses – at Jamaica, Barbados and Trinidad – with extension centres in St Lucia and Dominica. Each location will have a teleconference room for 20-30 people equipped with a voice circuit and speaker system. Students, tutors and instructors at any of the locations will be able to talk to, and be heard by everybody at all the classroom sites.

The system will also improve the dissemination of information in such vital spheres as public health and agriculture to some of the less developed islands of the region. The West Indian scheme is one of several planned to explore the use of satellite technology.

The Brazilian university has designed its own teleconferencing system in order to avoid the pitfalls of improving technology without a full understanding of its implications. The system provides simple, inexpensive and flexible communications linking medical and agricultural research workers at various institutions thousands of kilometres from each other.

PUZZLER

THERE are many ways to construct an open-topped rectangular tank of a given capacity (say, 1 litres). However, only one ratio of the three dimensions – length, width and depth – results in the minimum amount of material being used to give the required capacity. What is this ratio?

To put the question simply: What is the most efficient shape for such a tank? See page 79 for solution.

Workplace is compiled by Philip Hunter

FERRANTI
Selling technology
Cheadle Heath Division
COMMUNICATIONS
SEE PAGE 39

"3i Ventures recognised the Wolfson Institute of Biotechnology of Sheffield University as a centre of excellence in plant cell culture. Plant Science Ltd. was set up as a joint venture with Sheffield University with equity capital provided by 3i Ventures. Their involvement was highly professional and all their negotiations were conducted in a friendly and helpful manner with a notable lack of bureaucracy."

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PEOPLE

Smith and Jones team flies high at Icarus

Icarus Computer Systems now has a Smith and Jones partnership on its payroll. The two men hope to increase business for the North-west London based distributor of Superbrain and Columbia PC computers. **Brian Jones** *(left), who has been in charge of sales and marketing at Icarus for over a year, joins the board of the company as sales and marketing director.* **Roger Smith** *joins from Colt Computer Systems as products sales manager.*

■ Computer Automation has formed a sales team for its newly launched SyFAnet distributed processing network. Four sales executives have been appointed. Gordon Campbell brings eight years' experience as a sales executive with Barretts, Roneo Vickers and Olivetti. He will deal with the East Midlands. Dick Edwards joins from United Glass, where he worked for 13 years. He will be responsible for sales in West London and Buckinghamshire. Hugh McDaid joins from a sales career in the wine and spirit trade. He will be responsible for sales throughout South-west London, Surrey and West Sussex. Finally, David Giles has been promoted from production manager in Computer Automation's Dublin factory. He will deal with the Irish marketplace.

■ Ken Walton (above), managing director of STC Components, has also been appointed chairman of STC Business Systems, succeeding Sir Kenneth Corfield. The appointment has been made to give the company additional strengths in a liberalised telecommunications market. Walton has also been appointed chairman designate of STC Distributors.

■ Dr Richard Hornsell has been appointed managing director of Philips Business Systems, the £100 million a year UK office automation arm of Philips Electronics. He moves to this position from the post of European marketing director at Philips Data Systems in Apeldoorn.

■ Tony Scrivens has been appointed British Telecom field sales manager by Digital Microsystems, the local area network company which is part of the Exxel Group. Scrivens joined Digital Microsystems at its formation in September 1982 from Exxel Engineering, where he was responsible for sales of the Exxel range.

■ Carri Armitage (above) will be playing an important role in Peachtree's penetration of the European market. Responsible for pre-sales support, she will be producing Peachtree's international newsletter, European market research and general marketing activities. She will firstly help to launch Peachtree's operations in Italy. Previously she worked for Hambro Life Assurance in a sales support role.

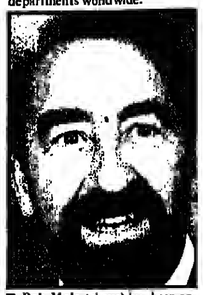
■ Software specialist in the London insurance market Sherwood Computer Centre has made two promotions to senior technical level. Sue Patel, formerly a team leader on the company's batch processing system for insurance companies, has been made a manager with special responsibility for technical review and enhancement of the Spartacus real-time insurance and reinsurance system. She has been with Sherwood since 1980. Steve Bardell, previously a business analyst with Sherwood's Dataloyd Division, where he has worked for six years, has been appointed a business consultant. He is now responsible for analysis and development of new business requirements for Dataloyd.

■ Quest International Computer Equipment has appointed David Bennett as sales and marketing director. He joins Quest from Control Data, where his most recent position was OEM sales and marketing manager.

■ Andrew Ford has joined Insight Database Systems in European marketing. Ford was previously with financial system specialist Star, where he was a consultant.

■ Promotion has taken Frank Richardson from sales and marketing director to the post of managing director with Lambert Computing Hardware Sales, distributor of DEC, DEC compatibles and a range of other peripherals.

■ Rodime has appointed Barrie Wilson as marketing administration manager. He joins Rodime from Burroughs in Livingston, where he was activity manager responsible for technical liaison and support between manufacturing, marketing and field engineering departments worldwide.



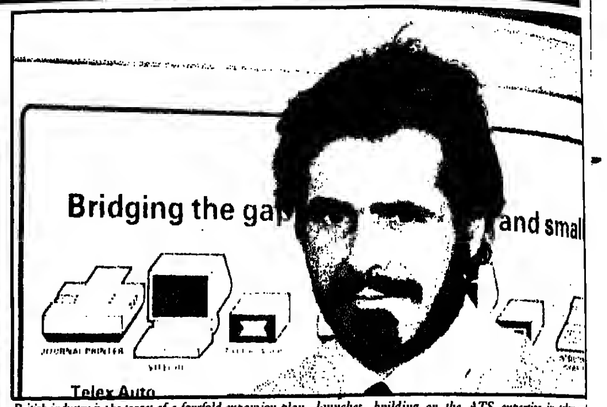
■ Bob Male (above) has been appointed branch manager, manufacturing division, responsible for sales in the UK and Ireland of MIMS, Geisco'a fourth generation application development system for manufacturing companies. Male joined Geisco in 1982 to sell manufacturing software.

■ Tim Cbaney has joined Camputers as sales manager responsible for UK and export sales of the Lynx range of microcomputer equipment, including the new 96K and forthcoming 128K models. He was previously a multiple accounts manager at Commodore, where he played a major role in building sales of the Vic 20 and Commodore 64 home computers.

■ Roger Paradiae has been appointed bronch manager, Midlands region, for Business Computer Systems. He is responsible lor sales and support of the company's range of mini and microcomputer systems. Paradise has been in the computer industry for 15 years and before joining BCL was with ICL for seven years in charge of new business sales in the Midlands.

■ Gandalf Data has named Tudor Banaclu in the newly-created position of European marketing manager for Gandalf Services, SA, its subsidiary in Geneva. Dr Bunaclu has been an independent consultant in data networking and was previously associated with Datelee a distributor of data communications products, and with Digital Equipment Corp (Lausanne).

■ Comac Systems, the computer aided maintenance management specialist of Colnbrook, Slough, has appointed Peter Forster (below) as marketing manager. His appointment follows the recent launch of Comac 111. Previously he was marketing director of James Clark and Eaton, glazier and glass processor. Comac has also appointed Peter Greenhalgh as Midlands salea executive. Formerly he worked for a lubrication systems engineering company.



British industry is the target of a fourfold expansion plan by **Tony Stenham,** *the new managing director of ATS (Communications), the telex network company. Formerly of Rolls Royce and British Leyland, Stenham plans to achieve his target in four years. Until now, Sussex-based ATS has concentrated largely on the business market, both in Britain and overseas. From his own experience in industry, Stenham believes ATS is ready to take on what he believes is a largely untapped industrial market. He plans to do this through a programme of major product launches, building on the ATS expertise in telex and electronic message sending systems. The company will aggressively market its expanded range through a new forced distributor network in Britain and overseas. Stenham moved to ATS from Thorn EMI. An engineer by training, he has spent all his working life in industrial management. He says: "What I hope to bring to ATS is a driving force. There is an awful lot of business in the industrial sector. There are people who we know can benefit from our systems, but do not know we exist."*

■ Douglas Gemmell has been appointed deputy chief executive of Information Technology Ltd, the parent company for Computer Technology Ltd, Office Technology Ltd and Network Technology. He joins ITL from Smith's Aerospace and Defence Compsny where he was director and general manager of the Cheltenham Division for six years. He was previously operations director at Membrain, responsible for engineering, production and quality control.

■ Mike Wenn has joined Delta Data Systems at its Welwyn Garden City headquarters as sales development and administration manager, having previously been with Harris Systems since the early 1970s, when it was Sanders Data Systems.

■ Stephen Page (right), one of the founder directors of Sapphire Systems, a producer and distributor of serious business software, has been appointed managing director of the company. Formerly chief accountant with W. Boulter & Sons Group, Page founded Business Solutions in conjunction with W. R. Spouse in 1979, which merged with Essex-based Sapphire Systems in 1982.

■ Simon Nicholer (above) has been made OBM sales director of the Peripherals & Victor Division of DRG Business Machines. Previously he was sales director of the Peripherals Division only. Chris Lindesay has been appointed product manager at DRG for the Victor Division and is responsible for marketing the Sirius microcomputer through DRG's own network of DRG Sirius dealers. Previously he was a senior sales executive with Nissei Sangio, part of the Hitachi group. Deryk Randall has come from Microfacilities to become a sales manager for Victor dealer products. He will support DRG Sirius dealers in the south of England.

■ Zygal Dynamics announces the appointment of Desmond Flynn to the board. He is responsible for sales and marketing throughout the Zygal group. Flynn joins Zygal from DRG Business Machines where he was sales and marketing director, before joining DRG in 1978 as South-eastern regional sales manager, he held sales and management positions with Data 100, ICL and Olivetti.

■ Catherine Ham has joined Rediffusion Computers Ltd as systems analyst for the London south support region. Previously, she spent three-and-a-half years with Computer Systems Development Inc, based in Dallas (where she set up the new office) and New York (as a consultant). Mike Doyeston joins Rediffusion Computers as systems analyst, customer services operations. He is a former ICL operations consultant.

DIARY

OCTOBER 4

Mon-Machine Intetaction Programme is the theme of the British Computer Society Microcomputer Specialist Group first meeting of the 1983-84 session at Baden-Powell House, Kensington, 1.30pm. Cost £1.50. Details from Robin Phillips, secretary, 21 Rye Close, Saltdean, Brighton BN2 8PP.

OCTOBER 4-6

Programming Business Systems in Basic is an NCC course, at the London Training School. Cost is £365. More details from Course Administrator on 061-228 6333.

OCTOBER 5

Meeting of the British Computer Society Displays Group – Input Techniques, Devices and Standardisation – at the Stanley Gill Room, BCS headquarters, London. Charge is 50p for members, £1 for non-members. Details: 01-637 0471.

OCTOBER 10-11

AGARD, the NATO Advisory Group for Aerospace and Development, is running a lecture series on Development and Use of Numerical and Factual Databases. Held in London, the lectures are free. Details: Defence Research Information Centre, Orpington 32111.

Wang (UK) Is holding four half-day seminars covering office automation and word processing. Fairfields Hall, Croydon. More details from Sara Perry on 01-621 1010, ext. 272.

OCTOBER 11

Telelex – a New International Communications Service, is the title of a talk by Dr A. B. Robinson, head of office communications and systems section, BT Research Labs, run by Honeywell in London. Details: 01-748 4191.

OCTOBER 12

Seventh annual symposium on computer applications in medical care. BCS Medical Group. Baltimore Convention Centre, Baltimore, Maryland, US. Details from Dr Virginia Saba, Nursing Consultant, Division of Nursing, Bureau of Health Professions, 3700 East-West Highway, Room 3-50 Hyottsville, Maryland 20782.

OCTOBER 15, 17

Data Protection is a one-day course in London on November 15 and Liverpool on November 17. Instructor, Joseph Kenny. Details from Keith Londos Associates, 07073-30114.

OCTOBER 19

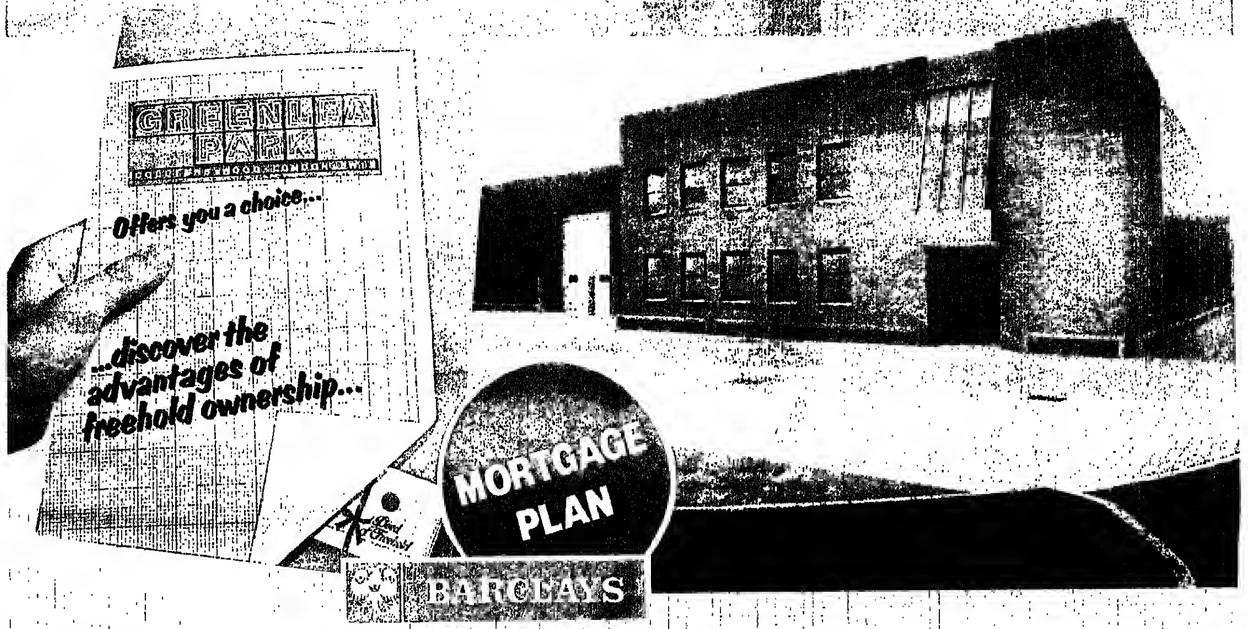
British Computer Society's Data Communication Specialist Group runs a meeting called Lan, PABX or PACX: Which is the Heb of Office Data Communications? It will be held at Birkbeck College, London. Details: Peter Radford, Logica, 01-636 5440.

OCTOBER 21

Scientific Computers is running a seminar on Macsyma, a mathematical software package, at the University of Sussex. Fee is £17.25. Details: Graham Wright (04446) 5101.

CONFERENCES

■ World Communications – Tomorrow's Trade Routes is the title of a conference to be held at the Royal Lancaster Hotel, London, on December 7. Cost is £125 (bookings of 10 places – £900). The conference will concentrate on the impact of developments in new technology and telecommunications on world trade. Speakers will include, Cecil Parkinson MP, Sir George Jefferson (British Telecom), Sir Kenneth Corfield (STC), David Firnberg (British Computer Society) and Sir William Barlow (Thorn EMI Engineering). Conference chairman Sir Donald Maitland, chairman of the UK National Committee for World Communications Year. For further information, contact the British Computer Society, 13 Mansfield Street, London W1. Tel: 01-637 0471.



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COMPANY ANALYSIS

STERN (right, with French Prime Minister Pierre Mauroy) . . . Putting up a bold front.

Backs-to-the-wall Bull looks brighter

Jack Gee visits France's Bull to discover how its fortunes have fared since changing its name from Cii-Honeywell Bull

IT'S still hacks to the wall at Bull, France's state controlled computer maker, though chairman Jacques Stern and general manager Francis Lorentz are putting up a bold front to the business world.

They have taken the opportunity of the Sicob gathering of industrial experts and journalists in Paris to present the achievements of the company since the socialist government came to power and the tasks which lie ahead.

Within a few months of changing its name from Cii-Honeywell Bull, the top management at Bull reports that, thanks to improved group sales it expects to halve last year's losses, bringing them down to FFr 600 million (£48 million) in the current trading year.

Stern says this brighter outlook reflects a 28% rise in Bull's sales during the first six months of the year, compared with the same period in 1982. He is confident that group sales will come close to FFr 11 billion (£880 million) for the full year, compared with FFr 8.13 billion (£650 million) in 1982.

However, the Bull management recognises that the group is unlikely to show a profit before 1986, the closing year of France's five-year electronics plan.

The main objective of the plan is to raise French high technology industries to the level of those of the US and Japan by 1990.

When Stern and Lorentz moved into the hot seats at Cii-Honeywell Bull a year ago, they took on the most unenviable jobs in France's computer industry. The till was empty; manufacturing was in a state bordering on confusion; staff were demoralised and in disarray; the customers were wondering whether they should turn elsewhere; and the relationship with Honeywell had gone sour.

Honeywell refused to inject any fresh funds into the group, in which the French government had reduced its stake from 49% to 19.9%. "Now," Stern claims, "relations with Honeywell are excellent."

Since the middle of 1982 Stern and Lorentz have embarked on a series of crash courses to instil new courage into their staff; hired new, able teams of engineers and sales people; and begun the slow, painful process of trying to restore the company to financial health.

In the process of the transformation of Cii-Honeywell into Bull, the company acquired an office automation subsidiary, Transac, from Compagnie Générale d'Electricité and SEMS, a minicomputer venture from Thomson.

Bull is about to assume new computer responsibilities in the division of assets between CGE and Thomson, and Stern has been advised by the government what to expect. Bull, in his encounters with journalists over the past few days, his lips have been sealed on this score.

An essential part of the new Bull strategy is to set up a series of subsidiaries with clearly defined responsibility for each area of activity and with instructions to show how much money they are making (or, in most cases losing). Peripheriques now concentrates the group's efforts on peripherals, Bull-SEMS concentrates on the old Thomson minicomputer market and Bull-Carte Memoire on developing and selling the Smart Card, a field in which the company shares with Philips Data Systems (France) a worldwide head start.

Stern said: "Cii-Honeywell Bull, in the course of the ups and downs which marked its history, produced a series of levels of procedures and bureaucratic organisations. These were ill-fitted to meet the needs of a sector which was developing as fast as our own in an environment of sharp competition. That is why we have now set up our specialised branches."

> **Bull carries a cumbersome product range – the result of zig-zagging strategy over the years, which it cannot shed without losing its traditional customers**

Facing the evidence that Bull cannot afford to put its fingers in every pie, Stern said: "We accept our reputation as general practitioner in data processing. Our customers expect from us as wide ranging a catalogue as possible, from the mainframe to the mini."

But he added: "We have to concentrate on a few key products. As for the others, he shall have to acquire know-how in grouping them, beefing up our catalogue through co-operation agreements and ensuring that all these systems can work together and communicate."

Apart from a major shake-up in top management, Bull has taken on 3,500 new staff, with the acquisition of SEMS and Transac. But, because of erosion through retirement, staff numbers have remained steady for the past year, at about 25,000.

Last year the 21,000-strong workforce at IBM-France produced a turnover of FFr 22.2 billion (£1.78 billion), compared with Bull's FFr 9.5 billion (£760 million). Ironically, Bull lost FFr 1.8 billion (£108 million) – the same as IBM-France's profit.

As a state controlled firm, Bull cannot undertake the improvements in productivity and pruning of staff which the logic of the situation dictates. It carries a cumbersome product range – the result of zig-zagging strategy over the years, which it cannot shed without losing its traditional customers.

Last year state control saved Bull from the bankruptcy that would have faced any other company in the same critical condition. Its debts totalled FFr 7 billion (£560 million) and it cost over FFr 800 million (£64 million) to service them.

In spite of massive state help in cash, Bull will receive only FFr 250 million (£20 million) of the FFr 500 million (£40 million) originally earmarked from the government's research budget for 1983. The government will provide FFr 1.5 billion (£120 million) in fresh capital this year, but this will drop to FFr 1 billion (£80 million) in 1984.

The task ahead for Stern and Lorentz is daunting. It is difficult to see how Bull can attain its objective of reaching financial equilibrium in three years.

Stern is enthusiastic about the venture with ICL and Siemens to set up a joint research centre in Bavaria: "English will be the working language," he revealed, and he says that Bull is sending many of its top research people to Munich to work on computer architecture and artificial intelligence with their British and German colleagues.

He rules out the joint development of a supercomputer, though ICL is working on a high number cruncher of its own for the French military, with much needed defence ministry funds.

One of the cruellest dilemmas confronting Bull results from the agreement with Honeywell in 1970 to build computers that are not compatible with IBM's. Today Bull's survival depends on sales of machines which lack the compatibility increasingly sought by customers. If Bull changes its policy it risks losing its present customers to Honeywell and NEC or seeing them switch to IBM.

Stern admits that Trilogy, in which Bull has a 7% stake, is playing an important role in the French firm's strategy. If Trilogy makes its breakthrough into hyper-computers, using new integrated circuits, Bull is certain to profit. It would then be well geared for a counterattack against IBM.

But time is running out for Bull. With only three years to go Stern and Lorentz will do their best to hoist Bull up by its own bootstraps. But, without huge investment in research, which the company cannot finance and to which the French government is making only a parsimonious contribution, they cannot be certain of success.

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microcomputers
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16-bit minicomputers
32-bit minicomputers
word processors

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furniture
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multi-user micro computers
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32-bit minicomputers
word processors
daisy wheel printers
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SOFTWARE MONTH

Word processing as we know it is being put out to grass

Word processing is really just another computer application. Software Month takes a long, hard look at its prospects

THE year of 1983 has seen the rediscovery of a long forgotten truth: word processing as we know it today is nothing more than a computer application.

If it is an application for a computer, then any (or almost any) computer should be applicable. Word processing thus rightly belongs as much to the personal computer as it does to the traditional word processor.

Nevertheless, most people immediately and automatically still associate the term "word processor" with a standalone, highly-specialised microprocessor-based system totally dedicated to the function of improving the efficiency of office typing.

The world processor is thought of as a completely separate animal to the microcomputer.

There are two reasons for this, both of them based on the history of word processing. In the first place, the modern word processor is the product of two separate but converging lines of development.

The earliest word processors evolved in a direct line from even earlier automatic typewriters. These were purely mechanical devices, often using punched paper or cards for "memory", and owing nothing to electronics. Automatic typewriters were, indeed, completely separate from the early computers.

However, as the computer developed along its separate line, it became more and more apparent that programmer productivity could not be ignored. Of paramount importance to productivity is the editor.

In many cases the popularity of any one computer often bears a direct relationship to the quality of its editor. It was logical, then, that computer manufacturers should spend a lot of time and energy on producing ever-better system editors.

Within this climate it was equally logical that sooner or later a computer manufacturer, particularly if it was already involved in the typing function, would take the relatively small step of replacing the mechanical elements of the automatic typewriter with more reliable electronics, give the whole thing a computer brain, control it

> **The original concept of the automatic typewriter as a separate entity to a computer has remained in the consciousness of the consumer**

by a system editor, and call it a word processor.

And it will surprise nobody to find that the company concerned was IBM.

It didn't happen overnight, and it is difficult to say when the automatic typewriter gave way to the word processor. IBM's embryonic word processor was, for example, little more than a mechanical typewriter with some magnetic memory and a control unit stuck inside.

It would be misleading, however, to claim (except in jest or symbolic terms) that IBM "invented word processing" (as has recently been suggested). IBM was merely in the right place at the right time (that is, everywhere, as in global domination), and offered the line of least resistance for an evolution that would have happened with or without IBM.

Nevertheless, IBM research and development has played an important part in shaping the modern word processor (particularly, for example, in the floppy disc and Winchester drives), and could thus fairly be described as a catalyst to the development of the word processor.

However, even with the IBM connection, this evolution from mechanics to electronics was gradual rather than sudden. It is mainly because of this that the original concept of the automatic typewriter as a separate entity to a computer has remained in the consciousness of the consumer, despite the fact that the word processor is now a computer pure and simple – with a keyboard (specialised to one degree or another) for input, floppy or fixed discs for storage, a screen and a printer for output, a microprocessor for brains, and software to bind it all together.

The second reason for the continuing identification of a word processor as a different machine to a microcomputer is the very size of the word processing market.

For every one (large, old) computer sold, there is a market for dozens of word processors. Discounting the modern electronic typewriters, an ambitious salesman could say to himself: "Wherever there is an electric typewriter today, there is potentially a word processor tomorrow."

So large was, and still is, this market that dozens of separate companies came into existence devoted solely to word processing. And if the manufacturer of the word processor doesn't (or at least, didn't) manufacture computers, how could the two products be the same thing?

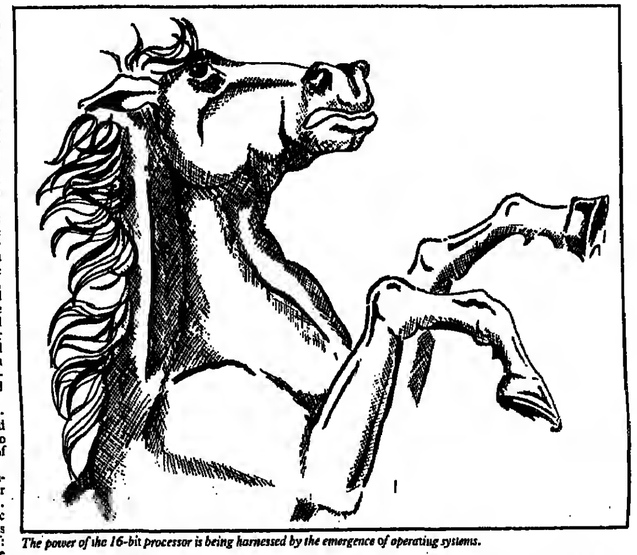
But the myth is now being dissolved, and the very existence of the dedicated word processor is under threat. The challenge started not simply with the eight-bit microcomputer, but more specifically with the CP/M operating system.

The portability of CP/M software created an enormous potential market for software writers. Slowly, some very advanced word processing software became available to the eight-bit microcomputer.

Two elements had come into play. Firstly, it had become worthwhile for individual software houses to write very clever software, and secondly, with that clever software, sales were able to offer to "turn your accounts machine into a word processor for less than £300".

WordStar is the product that immediately comes to mind – but the fact is that many people consider it to be the best word processor, whether using a PC or a dedicated word processor, currently available.

Small companies that had earlier thought of buying an accounts machine from Olivetti and a word processor from Wordplex now began to think of a single microcomputer using any one of a dozen word processing packages from Monday to Thursday, and an accounting package on Friday.



The power of the 16-bit processor is being harnessed by the emergence of operating systems.

For a while the dedicated word processor fought against this new tide. The first and most obvious option was to reduce prices and companies like Digital Equipment reduced its prices from around £10,000 to around £5,000 (for the WS78 at the beginning of this decade).

The next move was to stress the ergonomic research that had gone into the physical design of the dedicated word processor.

This year, however, has seen the emergence of the product that is likely to cause the ultimate shake out in word processors: the 16-bit PC at a price that is often lower than the more limited eight-bit dedicated machine.

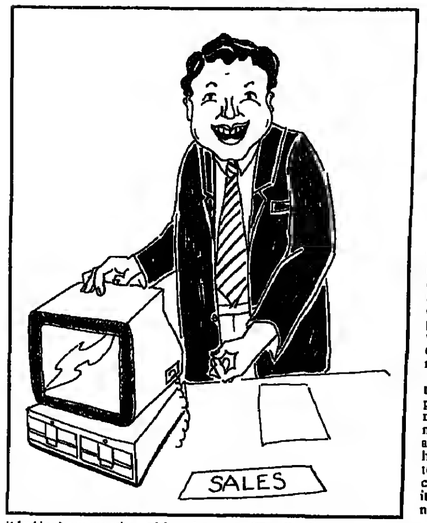
And this is at a time when microcomputers are in a period of transition. We are now seeing the emergence of operating systems that are capable of harnessing the full potential of the 16-bit processor (Concurrent CP/M-86, the expected DOS 3, Unix, Pick and others).

Logic says that few (if any) dedicated word processors will survive against this new threat; logic says that few (if any) dedicated manufacturers will survive at all.

Is it time to put the dedicated word processor out to grass?

Where word processing is heading? – a 16-bit professional computer.

SOFTWARE MONTH



"And here's our executive model word processor. We call it the PC . . ."

Personal micros alter the market

. . . but dedicated word processing may survive a while yet

TO determine whether the dedicated word processor (being a combination of both hardware and software integrated into a system dedicated to the more efficient processing of office text) can survive for much longer, one needs to examine what the word processing market really is.

There are, in fact, two markets: the large and medium-sized company with a pool of a dozen or more full-time typists; and the many thousands more one-man and a secretary, high street and home based companies – solicitors and estate agents, brokers, consultants and accountants, architects, designers and entrepreneurs.

Three years ago these two markets were served only by the dedicated manufacturer, who, through lack of competition, came to believe that there was just one big market. The latter market, however, is better served by the multi-functional personal computer than by the single purpose word processor – and for the word processing manufacturer, this market is now rapidly disappearing.

Whether you believe that word processors as separate entities will disappear altogether or not depends largely on whether your interest is mainly in personal computing or text editing. "In my opinion," says Tony Plackett, technical director of ACT (Pulsar), "the dedicated machine is redundant. Developments in operating systems and keyboard manipulation allow microcomputers to look like a dedicated word processor when needed and then to revert to other functions."

Although he must surely be thinking of the Sirius personal computer it is also the approach taken by British manufacturer LSI Computers. The 16-bit M4 has an fewer than 61 user-programmable function keys. These can be programmed to produce a total of 256 commands/characters, either by the user during use, or by simply invoking a pre-defined key-table file which automatically sets the keys.

LSI will not only provide a number of ready-made key-tables for the leading software packages – WordStar and Spell Binder word processors included – it will also provide a plastic overlay that labels each function key.

Used with a little imagination, this feature can make WordStar far easier to use, and even more powerful than it originally seems.

Character swaps and sentence deletion – both missing from WordStar's direct capabilities – can be programmed into single keys by the judicious use of block, cursor movement, and string search commands.

"A word processor is nothing more than a glorified typewriter," continued Plackett.

"Computer-processing text is a relatively simple and easily definable operation that WordStar and other packages of its calibre perform with ease. While their speed may be marginally improved, very little in concept needs changing.

"It's really in the adjuncts to the package that developments will take place. For instance, printers are bound to become more sophisticated. The new breed of near letter quality matrix printers could very quickly replace the daisy-wheel, and once ink jet appears at a reasonable price, multi-colour output will become the rule rather than the exception."

Redundancy is clearly a view not accepted by the word processing manufacturers. "Yes, of course, the word processor will survive," says Bill Cattle, managing director of Dictaphone Company Ltd. "It's a question of application.

"On the dedicated machine, the software is designed around the hardware, and is therefore usually superior to the general purpose machine. Word processing applications have about three times the keyboarding of other DP applications – and the user is generally a highly trained and specialist keyboard operator.

"To get the best of both the machine and operator, the system must have a perfect integration of keyboard and software. This is a situation that will always, at least for the foreseeable future, be required – and it is a requirement that can only be met by the dedicated word processor. You could say that it is simply a case of horses for courses."

A similar view comes from Alan Frost of Philips Word Processing. "About 150,000 typewriters are purchased annually for business use. The productivity of the typing station can be increased dramatically by using a word processor," he said.

"It is unlikely that office routine will change, certainly over the next few years, to require a typist to need data processing facilities. Similarly, the majority of people who now need the data processing capabilities of the personal computers are not, in the main, large proficient of business text. 'A horses for courses approach would therefore seem the most sensible route.

"Having said that," continued Frost, "a machine that can only do word processing is not likely to be here to stay. It is unlikely that people will wish to replace their typewriters by machines that can only produce text.

"Most word processors on the market today are also able to run data processing programs."

Here, however, the word processor cannot compete with the personal computer.

As Tony Plackett says: "The prime benefit of word processing on microcomputers is its ability to integrate with other applications.

"Used in conjunction with a spreadsheet or financial modelling package, word processing work on two levels, creating the files to drive those packages or taking the output and adjusting if for presentable management reports.

"And in the next few months we should be able to integrate text with proper graphics."

The future of word processing is more likely to be with Digital, IBM, Wang and, dare we say it, our own ICL, than with traditional manufacturers

If this is right, that it is indeed the case of horses for courses, then the dedicated word processor will surely survive for a long time yet. The market, however, is both shrinking and rapidly changing in the face of the personal computer.

A company really needs the requirement of at least three or four full-time typists before it can justify a dedicated word processor. But many companies of this size also have or need a central minicomputer, mainframe or microcomputer network.

It would seem unlikely that such buyers would want to mix their suppliers.

In other words, if a company has Vax or IBM mainframes, it is likely to prefer Digital or IBM word processors.

When viewed in this light, it seems fair to say that the dedicated word processing market can no longer support the number of manufacturers still operating, and that of these, it is the bigger companies with established software growing large computer user bases.

The future of word processing is more likely to be with Digital, IBM, Wang and, dare we say it, our own ICL (if it can only get its act together), than with Wordplex, ABS and the other traditional manufacturers.

A case of horses for courses

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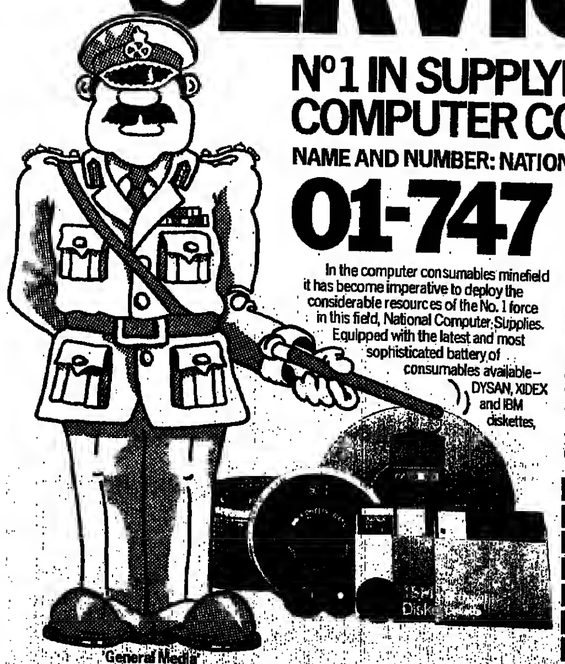

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General Media

SOFTWARE MONTH

The easy pickings days belong to the past

Software Month has seen word processing's future – it lies in information processing

TOMLINSON . . . Reacted quickly.

THE days of easy pickings and rapid growth for word processing manufacturers are undoubtedly past. And one of the main reasons for this is the growing understanding and discernment of today's computer user.

The market is separating into two distinct spheres: that of dedicated word processing within large or medium-sized companies; and that of multi-functionality within smaller organisations, where a computer is used as word processor one day, an information storage and retrieval device on another, and an accounts machine, or modeller in between.

The ability to move data from one application to another is a fundamental requirement for the latter market. But it is the personal computer that has adapted to these demands at the faster rate. The key is in the supply of compatible software, and here no dedicated word processor can possibly match the options available to the personal computer user.

The Sirius user, for example, can first decide where priorities lie: if it is in accounting, first select the best possible accounts package and then look around at compatible word processors; if it is word processing, first select, say, WordStar and then choose between VisiCalc, PlannerCalc and SuperCalc for his spreadsheet, and between DMS, dBase II and Rescue for information storage and retrieval system. No dedicated word processor can for could until recently possibly offer such a choice.

The personal computer manufacturer has also adapted to the new technological developments much faster than the word processor manufacturer. Nearly all new personal computers are announced with at least 16- and sometimes 32-bit processors, while the majority of word processors are still eight- or 12-bit systems. We must always remember, however, that the supply of manufactured goods follows demand, and not the other way around.

If the multi-functional personal computer is the latest technological advance, it is because the market demands multifunctional computers. However, whenever a new technology threatens the old, an event often known as the sailing ship phenomenon occurs. The old technology (in this case, dedicated word processors) does not simply give way to the new (in this case, the personal computer) – it is spurred into a new and rapid phase of improvement just as the sailing ship did when faced with the threat of steam.

One word processing manufacturer that has reacted with rapid and continuing improvements to its product is Compucorp. Compucorp is an American manufacturer with a UK-based software development team. About a year ago, the company found itself on the short-list to supply word processors to a UK university.

The requirement was not, however, for a straightforward word processor, but for a scientific word processor. Don Tomlinson, Compucorp's UK sales manager, reacted quickly. He arranged for an interface from the Compucorp word processor to the Sanders S700 dot matrix printer.

One wonders if the real difference between a word processor and a personal computer exists in marketing terms alone

This printer works not on the principle of a fixed matrix for each character (say, 7x9 dots), but on what it calls the infinite matrix. It can overlap individual dots by as much as 75%, thereby enabling programmable characters of almost any design to near letter quality.

Since the "design" of individual characters is controlled by software and held within the printer itself, it is able to produce several different typefaces, including Roman and Scientific, on the same document.

Tomlinson also set his UK software team to develop a scientific character screen generation package – which they did. With the new printer link, this resulted in the development of a sophisticated scientific word processor within a month or so of the demand first arising.

The Compucorp word processor is actually an excellent example of the way in which dedicated word processors must adapt to the new demands of the computer literate business society. It was one of the first word processors to include a spelling checker as standard (it actually prompts the user with what it thinks may be the correct spelling of an incorrect word).

It has a highly sophisticated maths routine that can automatically be invoked by the output of a selective sort from a company database – and both can be controlled by a "command file" facility known as Autopilot.

The latest system, the Series 700, is not marketed as a word processor, even though it is sold as one. Like so many of its current competitors, it is an information processor. The market now demands more than just word processing, so manufacturers like Compucorp must give more – such as the facility to run CP/M, a facility now available to most word processors.

More recent announcements from Compucorp include a networking facility, and now an integrated DBMS. The new database goes much further than the earlier records management feature, and gives more in concept to DP than to word processing. For the word processing user, however, the most exciting development is the way in which it can be used with word processing.

For example, information stored in a database can be recalled directly into a word processing document. A name and address can thus be retrieved from the database and inserted into the document on the screen while it is being composed.

This can apply to any information stored in the database. Commenting on the new database, Tomlinson said: "We are now in the process of piecing together different types of work to complete the office automation picture. Database management is a vital part of this fascinating jigsaw puzzle, providing the missing link between word processing and data processing."

But all these advances are still not enough to halt the erosion of the traditional word processing market.

Compucorp and other dedicated manufacturers have adopted the approach of developing, or adapting, specialised vertical market packages for specific markets.

It is not just the same standalone word processing market that is being affected by the increased demands of the user; the market is changing equally rapidly on larger systems. A few years ago, a word processing package could be placed on a standard minicomputer like the PDP 11, and he called a shared logic system.

Today the market is more discerning. A company that can afford a minicomputer wants more than just word processing for its money.

One wonders, however, if the real difference between a word processor and a personal computer exists in marketing terms alone. After all, we can hardly expect our executive middle manager to jeopardise his macho man image by using a word processor – that's a typist's job.

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SOFTWARE MONTH

How to write your software more quickly

David Ferris examines the increasing popularity of application generators

APPLICATION generators have become extremely popular within corporate environments recently. At the mainframe end, Cincom is the clear market leader – it has sold about 1,000 units over the last two years, amounting to over $30 million in revenues. Its dBase II is the leader among micro corpnrate users.

The tiend is here to stay, because provided the application is right, software development time is reduced treinendously. But until recently it wasn't clear to me why this is so.

We have been spending a lot of time helping inftirmation centres provide support for application generators, and while talking to users, the reasons for the reduction in time have become apparent. It seems to be primarily due to their ability to offer a much simpler and more self-contained development environment.

First of all, the world of datsbase is full of words used in different ways, an s review of what application generators are is appropriate.

There are no hard boundaries between application generatnrs, and other kinds of data storage and retrieval systems. They lie in the middle nf a continuum which begins with products which can really be used by end users, such as Focus and PFS:, and ends with those full-blown DBMS systems which can only be used by highly trained programmers, such as IMS or MDBS.

The best known applicsUon gencrstors include such products as Mantis, UFO, and ADF on mainframes; snd dBase II, Condor, FMS-80, and The Last One on micros. Because I'm personally most up-to-date on dBase II, I'll use it to illustrate this article's points. The msin characteristics which apply most of the time to most applicaUon generators are:

Fairly detailed CRT definition. You can point screens directly, specifying simple edit and validation criteria. But dBsse II is very poor in this regard: programmers generally end up having to give painstaking row-and-column commands.

Multiple file handling. Programs can secess several files at the same time, rather than just one. And dBsse II sllows concurrent access to two data files, which is insufficient for msny of its applicatinns.

Interaetlve data definition. There are nice interactive facilities allowing dsts srructure definition and alteration, including convenient dump and restore utilities. In this regard dBase II is very powerful.

Interactive ad hoc aeeess. An interactive command processor lets you do ad hoc query, reporting, and database update in an Englishlike language. This is anntlier major dBase II strength.

Fairly powerful DP logic. Sunte sort of proprietary high level language is provided. It is used tu specify data edit, validatiun, storage and retrieval logic, and the flow of control between the various formatted screens and menus. At best, these hnve the relative ease of use of an English-like language. At worst, they look like a bastardised form of PL/1, Cobol, and Basic. In the latter dBase II's lunguage falls: it's pnwerful, but often unwieldy.

Given this characterisation of applicatiun generntors, why shnuld they speed up development tu the extent they dn? In particular, why should the dBase II programmner be able to write software su much faster, say, than a Cnbnl programmer uccessing VSAM files, using SI'F under TSO?

As previnusly remarked, the main reusnn seems tn be that applicatinn generators offer much more of a self-contained and integrated environment.

In a typical mainframe approach to sufiware development, the development staff must be familiar with n wide vnriety of different system components. Few of these present a major challenge to the intellect taken by themselves, but taken together, they present an almost bewildering hndge-pndge of different prngrams to learn.

To write even the simplest of programs, a large nnmber of sequential interactions between components is required. Thus mainframe development typically requires familiarity with CICS, VSAM, JCL, TSO, SPF, dumps, cumpiler control instructions, a linker-loader, und file mainteuance utilities.

It's a major effnrt tu become familiar with all these different subsystems. Technologically, it's also nn utter waste nf time, resulting from poorly coordinated systems software, and design which placed little emphasis on programmer friendliness.

To write a mainframe program is tn spend most of one's time thinking ahuut how to shnffle the program from subsystem tn subsystem, rather than un luw the program itself works.

The dBase II programmer, hnwever, has a much easier time in this regsrd because dBase II offers a much simpler environment withln which prngram development can take place.

Ferris is chairman of San Francisco and London-based Ferris Corporation, which provides powerful computing services to the business computer professionals of large organisations. Its offerings include training on how to support powerful computer database systems.

Using the interactive data definition facilities, the programmer can define a data file in as little as 30 seconds. Then, using the interactive ad hoc data access commands, he can quickly add a few test records.

Unless he is prepared to accept an extremely rudimentary typed screen definition, the programmer must then turn to writing specific programs in dBase II's high level language. The various data entry and retrieval screens are normally defined in this way, as is the linking between screens, the data edit and validation logic, and the file-handling logic.

Writing these programs is the most difficult part of using dBase II. It's rather like a half-finished, full-blown high level language.

It's a major effort to become familiar with all these different subsystems

We are finding that many corporate end users are trying to learn it, and most of them are failing in their efforts. The language isn't hard for computer professionals to learn, and it isn't hard for the most keen enthusiast, but for busy end users trying tu implement a quick and cheap application, it presents the product's Achilles' heel.

On the nther hand, the language does have a number of very appealing features, such as a relatively high level of data independence. For example, nu data definition needs tu take place within prngrams, unlike Basic or Cobol. This saves programming effort, and it also saves the effort of having tu go back and alter programs if new fields are added to the file.

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You are a senior electronic engineer, programmer or software project manager, using microprocessors in a sophisticated application, working in a team of more than two/three engineers.

Seminar 1

Agende

09.45 Registration

10.00 The multi-user environment
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10.15 The Software production cycle
Today's designer often faces more work in learning how to use development tools than producing his end product. This interactive presentation will overview the generation of a load module for a real application and demonstrate easy to use operating system utilities.

10.45 Herdware/Softwere Integretion
The marrying together of hardware and software in real-time applications has traditionally been fraught with problems and can sometimes take 60% of total project time. An interactive presentation/demonstration shows how the Tugger Trace Analyser and other advanced integration tools can speed this stage of the development cycle and improve product quality.

11.15 Coffee/Tea

11.30 Logic Analysis Tools for the '80s
The essential complement to the engineers tool-set the Digital Analysis System and the new 1240 logic analyser have features to help track complex hardware related problems in all applications. Including automatic test.

1.00 Lunch

Seminar 2

2.00 Pescal programming tools for 16 bit microprocessor targets on the DEC VAX or the Tektronix multi-user system
The essential need for the productive programmer is to stay at the samel level of abstraction from coding to debugging. An interactive presentation shows how the Pascal Language Development System meets this need.

3.00 Coffee/Tea

3.15 TNIX*/Productivity Tools on the Tektronix Multi-User 8580/1
Today's development engineer need not be encumbered by operating systems or hampered for lack of productivity tools. An interactive presentation/demonstration shows how TNIX and its associated productivity tools have overcome these obstacles.
*TNIX is a Tektronix implementation of UNIX. TNIX is a trademark of Tektronix and UNIX is a trademark of Bell Laboratories.

4.00 Future product strategies with an emphasis on software tools that concentrate on the conceptual stage of the design

4.10 Close

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DEC LITIGATION

What motives lie behind DEC's court action?

When giant takes small to court, there must be some complex reason behind it, writes John Kavanagh

WHEN the world's second biggest computer manufacturer takes a small London systems house to the High Court on software piracy allegations, there must be something in the wind.

Why should the giant Digital Equipment go to all that trouble to sort out a small amount of systems software licence income, especially when Darkerest not only denies the charges but has also put in a counter-claim for £10 million?

The answer lies in the fact that in the last few years DEC has discovered that the applications systems market is big business. The company, which started as an engineering firm selling naked processors to other engineering firms, is now in the business systems market in a big way.

It still operates in its traditional way: through third parties. Two years ago it set up the authorised computer distributor scheme. There are 11 in the UK and they call themselves an elite, because DEC gives them its seal of approval only after close scrutiny of their finances and competence. They get normal discounts but also help with promotion and the right to use the DEC logo.

In addition there are about 300 official original equipment manufacturers in the UK, although fewer than 100 do any big business. DEC microcomputers are sold through 46 official dealers.

These schemes are fine for the companies covered by them – but "unofficial" systems houses are granted a licence to make only one copy of an operating system for use on only one processor. This enables them to build a system and sell it with the operating system to an end user, who cannot then sell it to someone else.

Systems houses outside the official schemes therefore cannot get an operating system from an authorised distributor and sell it to one of their own customers.

DEC UK software services manager Peter Cook believes piracy of the company's operating systems, compilers and utilities cost it £10 million in lost revenue in the UK last year.

"Previously we were losing our own money," he says. "But now we have to protect our official OEMs and distributors from competition from firms which can offer lower prices because they're not paying for systems software."

Cook believes there is only a small number of companies making a full living from DEC equipment and pirated systems software. But he also believes nearly every software house in the country has been guilty at least once.

There could be quite a shake-out among DEC systems houses

If persistent pirates are discovered DEC tries to negotiate a settlement. But it will go to court "if the person refuses to recognise the situation".

In the UK DEC has gone to court only with Darkcrest and Systime. Systime did not contest the case, made a "very substantial" payment and said it would keep a tighter watch on software licensing.

Darkcrest managing director Nick Brackenbury says his company has done nothing that has not been "standard DEC practice" for 10 years. He claims DEC has been tightening up on its software licensing conditions not to cut piracy but to hit the competition. He says the lawsuit really stems from the fact that Darkcrest beat DEC to an order from the Royal Gloucester Hospital.

Whatever the rights and wrongs of these claims and counterclaims, this last point does draw attention to a potential problem which both DEC and its authorised systems houses recognise: that of direct competition between the computer supplier and its official outlets for end user business.

DEC has said it wants to become the world's biggest supplier of software. Initially it is selling packages developed by other firms. Early this year it produced a catalogue of software for its personal computers and it is now bringing out a similar catalogue of 120 minicomputer packages, mostly from third parties. They have been tested rigorously, to the extent that most have gone back to the originators two or three times.

As Cook says, the company has to be thorough because it is selling and supporting the products under its own name: it is staking its reputation on them.

UK firms have queued up to be in the catalogue because it gives them access to a massive worldwide market without the need for large numbers of staff.

All this is good news for software houses and for DEC: it gives the company a ready-made list of established software products to sell to end users. But that is just the market the authorised systems houses are in.

Cook insists there is no conflict of interest. "We're providing software tools that systems houses can add their own value to," he says. "The catalogue includes word processing and graphics packages, data retrieval systems and so on."

But DEC enters a grey area with other products such as ledger packages, which are also in the catalogue. Cook says users do not buy computers merely to handle ledgers, so systems houses can make money by adding office automation or tailoring systems for specific industries.

The systems houses are not so sure. The whole matter was aired noisily early this year at a Computing Services Association meeting. DEC OEM marketing manager Stuart Haughton said systems houses would not do much business with general packages such as ledger packages unless they could add value.

Neville Cerfontyne, a director of Hoskyns, one of the authorised computer distributors, said afterwards: "They were telling us not to get into the software and services market which we're already in. They were saying we could not go for horizontal markets on which we've already spent millions. It was a blatant threat. DEC just wants to get into a big software market."

Today Cook claims that the meeting misunderstood. But Cerfontyne says: "If they were only talking about software tools they chose a peculiar way to do it. We all got the same impression; perhaps it was a wrong one. Or perhaps they didn't mean software tools at the time but now say they did because of the outcry."

If that row has died down it could blow up again, because according to Cook DEC will be selling "full solutions" to less than 10 years' time. And he expects specialist user applications packages to find their way into the catalogue before then.

Cerfontyne agrees. DEC now has a lot of competition in the hardware market, where product prices are falling, so it makes sense for the company to move into applications software, he says.

All the same, Cerfontyne welcomes this development. But not all DEC's official outlets – even some of the "elite", the 11 authorised distributors – would agree, according to Bernard Conlon, sales and marketing director at Commercial Minicomputer Software.

The company has joined the elite 11 only in the last month – and it is a typical example of the kind of specialist systems house DEC wants for the future. For as Conlon says: "We're very vertical: we cover insurance, air freighting and plant hire systems."

The company has been around for 10 years and a DEC official OEM for two. And Conlon's comments must be music to Cook's and Haughton's ears.

"Some of the authorised distributors certainly need to sort themselves out and get into some vertical markets," he says. "Too many have been DEC OEMs for a long time and they expect all sorts of favours. They expect the company to give them sales leads yet they're not adding any value to the systems themselves. They're naturally going to be worried about competition from DEC."

If Conlon is right, there could be quite a shake-out among even long-established DEC systems houses as the company competes more and more for end user business.

A shake-out could benefit the industry, for the firms that survive are likely to be the best ones. And as Cerfontyne says: "The market is growing very quickly and there's a shortage of programmers. There's room for all of us."

BRACKENBURY (left, with two Darkerest colleagues) . . . "DEC has been tightening up."

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COMPANY PROFILE

CARLTON AMDAHL . . . Should be given equal credit with his father.

The Amdahls' company seems to be weathering production delays as it plans its assault on the established suppliers. Bob Djurdjevic reports

Trilogy tempts the investors to risk it

AM1D the echoes of the battle of the giants, a relatively small American company is making a bid to become the world's third major supplier of advanced computer technology. While all eyes are peeled on the IBM versus Japan Inc duel, Trilogy Ltd, of Cupertino, CA, could sneak past to become a major computer industry force.

At least that's what its investors are hoping, who have put up over $250 million of investment capital so far. Among them are finance companies such as Bank of America and a Merrill Lynch partnership, insurance companies like Aetna and Canada's Crown Life, and computer companies like Honeywell Bull of France, Sperry Corp (Univac) and Digital Equipment (DEC).

Considering another $100 million is still needed, according to company founder and chairman Dr Gene Amdahl, Trilogy promises to be one of the most expensive start-ups in the computer industry.

By comparison, before Amdahl's first IBM-compatible venture, Amdahl Corp, went public in 1976, initial investors had put up about $36 million. Adjusted for inflation, this would be about $90 million in 1983 terms, or about one quarter of Trilogy's estimated seed capital requirements!

This is why Gene Amdahl's second PCM venture couldn't wait to have its product completed before going public. On September 1, Trilogy made its bid for public funds through a Merrill Lynch Capital Market's preliminary offering. The company is offering six million new shares (about 15.8% of the total after the sale) to the public at $12 to $15 each.

If these shares are fully subscribed for, the proceeds will provide most of the additional financing which the company needs.

Trilogy plans to use the $60 to $70 million raised to fund remaining development costs. Another $30 million will be allocated to capital equipment costs. About $20 million will be used to fund the initial marketing and customer support services.

Pending the completion of the public offering, Trilogy has also secured a $25 million bank loan, to cover the shortfall between the proceeds of the sale of its common stock and the planned expenditures.

If Trilogy's latest first customer shipment (FCS) date – July 1985 – is met, many investors will have had to wait over five years to find out if their investment has paid off.

This illustrates how much faith and nail-biting is built into every high-risk, large CPU venture, along with its chips and circuitry. But the rewards which successful ventures reap are also large.

For example, Amdahl Corp was able to report a profit in the first quarter after it started shipping its V/6s, because of its "purchase only" strategy. Its seed investors also had to wait almost five years to see the first CPU shipped.

The waiting paid off handsomely, however, when the company went public. Now some of them hold Amdahl stock worth over 15 times their initial, multi-million dollar investment.

Trilogy's preliminary prospectus does not try to conceal the high level of risk involved. The Securities and Exchange Commission's disclosure requirements saw to that. Wornings about the risk factors such as "unproven technology", "potential schedule delays", additional financing needs, etc, are prominently displayed.

All of these factors were present to an even greater extent when Trilogy's original backers decided to invest money in the company. What makes the public offering more risky, however, is its price. While the average price per share paid since June 1983 was $3.26, the public is being asked to pay four to five times that much.

There is no question that early investors faced bigger risk. As recently as this summer, however, Sperry Corporation and DEC purchased $40 million and $24 million worth of Trilogy stock at about $8 a common share.

Of course, both companies are expected to be more than just the silent investors – Sperry and DEC should be major buyers of Trilogy's chip technology.

In a public market trading, concerns about over-pricing of any issues are easily resolved by supply and demand forces. But technological and computer market issues, which must be considered before deciding to invest at all, are much more complex.

Right from the start Gene Amdahl has had an ambitious plan – building the world's first IBM-compatible computer. The official start-up date was November 1980, but the original ideas go back to January of the same year.

This is when the two Amdahls, Gene and his son, Carlton, who is still with Magnuson Computer Systems Inc, first discussed the possibility of creating a "super chip". If they were able to build a large chip (in the order of 50k gates per chip), they would be able to reduce the number of interconnections – one of the main reasons for failure of smaller chips.

The second benefit of a large chip "real estate" is that more redundancies can be built in, thus further improving the yields. Only 50% of Trilogy's chip "real estate" is actually occupied by circuitry.

"It won't work," was the feedback from most of the engineers in the Silicon Valley with whom the Amdahls discussed the idea. It is no wonder most people were sceptical considering the 50,000 gate density was about 100 times greater than had been accomplished by that time.

It would take a 300ft sheet just to lay out the circuits manually, allowing 1/4in per gate. Of course, if it were done manually, Trilogy's project would never be completed.

Today the company is using an IBM 3081-K, two Amdahl V/8s and an AS/9080.

Gene Amdahl continued to court potential backers, undeterred by the scepticism of his colleagues. By November 1980, the new venture was off the ground, shored up by $150 million worth of seed capital. The insiders still control about 45% of its stock.

"Gene's name works magic," one Amdahl Corp executive said recently. Indeed, there is little doubt that if someone other than Gene Amdahl had come up with the same idea, the funding for the project would be nearly impossible to secure.

There is little doubt that if someone other than Gene Amdahl had come up with the same idea, the funding for the project would be nearly impossible to secure

■ Continued on page 29

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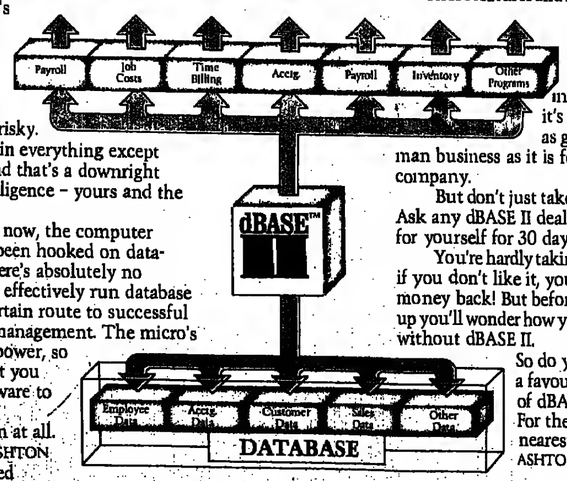

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ASHTON·TATE

COMPANY PROFILE

Trilogy attracts investment in spite of the high risks

■ Continued from page 28

process. "Sometimes sparks would fly," said Ted White, describing the moments when the two designers would hold opposing views about a problem's solution. Nevertheless, those sparks spawned a design believed capable of delivering at least 30 mips of CPU performance by mid-1985.

This means 3.75 times more power than IBM's current 308X basic processor (3083-J; 7.9 mips), and about 2.7 times better performance than Hitachi's AS/9060 (11.2 mips).

Besides performance, another key to success as a large computer maker is being the low cost producer. A key to being a low cost producer is the yield in the manufacturing of chips.

Until now, IBM has been able to retain a leading position because of its huge economies of scale. It is believed that IBM's manufacturing cost is only 20% of a large CPU price, and that only in the early phases of its life.

Later, as the company starts to benefit from the manufacturing learning curve, the costs decline even further, perhaps down to 15%. That means just over $600,000 for a CPU bringing in over $4.1 million in revenue. And that means huge margins and just rewards for lengthy and expensive development processes.

High IBM margins is one of the reasons a company with higher relative manufacturing costs (eg Amdahl Corp) has stayed competitive with IBM, being cootented with lower returns. Trilogy's technology, however, promises to put a relative upstart into the driver's seat as far as costs are concerned.

The reason is high yields. According to a study done by independent consultants, Trilogy can expect to achieve the accuracy of 4½ to six defects per square centimeter.

Initially, 12 defects per square centimeter are expected – this means at least a 20% yield, compared with most chip makers' current yields of 5% to 10%. Gene Amdahl said he actually expected yields to be "significantly greater than that".

It is clear, therefore, if Trilogy were to succeed in its goal of becoming a low cost producer as well as having the fastest computer, it would be unlikely to be beaten by anybody, even IBM.

"If one were to be able to improve the yields, nothing but goodness follows," an enthusiastic Ted White said.

To accomplish this, Trilogy had first to invent new CAD/CAM technology. By the end of the second year of development, one third of the company's development team was working on CAD/CAM projects.

Trilogy has recently also purchased an AS/9080 (20.2 mips) to run CAD/CAM applications on it, because it requires the largest available processor.

The company's total staff at the end of last year was 400 people. By June of this year, this had increased to 480 employees. Of this number, the engineering departments had 233 people and semiconductor operations 101, with the balance divided between facilities management, manufacturing and general administration and marketing functions.

The company currently plans to have about 800 employees by the end of June 1984.

Another important factor in the chips' production is the "clean room". In Trilogy's case, there are three-level processes, with the last one, where the chips are actually made, being off limit for people.

Technicians, dressed like NASA astronauts, are only allowed into the second, "semi-clean" chamber, from which they operate the chip-making equipment in the third, "clean" room.

Meanwhile, ordinary mortals are not allowed past the first chamber, where floors glow in filtered yellow light and sticky tapes remove dust particles from shoes.

An IBM spokesman maintained this was sufficient, because of the top-down filtration system in the clean rooms.

Trilogy's development process has not been a constant success. Originally scheduled for shipment in August 1984, by November 1982 the project had already slipped slightly. November 1984 was then the expected FCS date.

By this stage, the company had already spent $110 million of the initial $150 million, and was looking for another $25 million of seed capital. Unexpected purchase of machines which had been planned as leases was cited as the reason.

Since that time, Trilogy has received over $100 million of new investments, and is looking to spend another $100 million by the end of the project.

"These things always take longer and cost more than one hopes," said Dr Amdahl recently.

Trilogy's position will not be nearly as good as it would have been if the company had been able to stick to its original timetable. Any more slippage will have a further negative effect

By March this year, FCS date was delayed some more, to February 1985. According to Amdahl, the company had had problems with its top semiconductor man. The now departed head of the semiconductor division was putting too much emphasis on basic research, and not enough on development and production.

Trilogy replaced him with Doug Pelizer, previously head of Fairchild's bipolar technology.

"There is going to be a delay in the CAD/CAM phase, but not as much as four months," said Dr Amdahl. This work was originally scheduled to start pilot production on March 22 this year.

Now it appears the delay will be longer than expected, with the latest estimated FCS date slipping to July 1985. The costs of such delays are significant.

According to Amdahl, the four-month delay from November 1984 to February 1985 would cost an additional $15 million. But a year's delay in FCS date will have a much more profound marketing significance.

Assuming IBM's Sierra processors are announced in the first quarter of 1984, with FCS date in the third quarter of the same year, Trilogy's original timetable would have allowed it to attack IBM's 14-16 mips basic processor with its 30+mips giant in the same timeframe.

There isn't much doubt what the outcome would have been. But by July 1985, IBM will probably be shipping Sierra in volume, and Hitachi's 20-25 mips base engine will also probably be taking part in the fun.

Trilogy's prospectus says it expects IBM's new system to be delivered in 1985. Some other sources concur, citing as the reason IBM's alleged performance problems with the Sierra mainframe.

Trilogy's prospectus also warns: "If this new IBM computer is not compatible with, or has significantly more than twice the processing power of the currently available 308X line of computers, or is delivered before 1985, the commercial success of the company (Trilogy) could be severely affected."

This means Trilogy's position will not be nearly as good as it would have been if the company had been able to stick to its original timetable. Any additional slippage will have a further negative effect on the magnitude of its success.

By 1987, for example, there will be not only a new generation of IBM processors, but also an XB-type machine. This would turn Trilogy's advantage in being able to design an XA-type machine into a potentially costly retrofit – to keep it compatible with IBM's new mainframes.

Some critics also point to the fact that this time, IBM and the marketplace are better able to anticipate Trilogy's competitive threat than when Amdahl was first designing his V/6s. IBM is no longer a self-infatuated sleeping giant, but an aggressive competitor, working hard on coming back against the threat of advanced Japanese technology.

This time, IBM is also taking Gene Amdahl seriously. The giant computer company has reportedly established two taskforces to study the potential impact of Trilogy's technology on its business.

As for the Japanese, Dr Amdahl himself speaks highly of their accomplishments in the computer industry. "Their technology is phenomenal. I hope that we will be able to compete with them, but it would have to be a sustained effort to win the technological war."

Japanese companies are not driven as much as IBM is by the quarterly shareholders' reports.

Because of the smaller number of owners, compared with IBM's 725,000 shareholders or more, Japanese companies are able to react more swiftly.

There is also a greater entrepreneurial feeling among the company executives. And it is entrepreneurs, like Gene Amdahl, who have been giving the world new technologies – not the big company executives.

This means that Trilogy must watch IBM as long as it intends to compete in its galaxy as a plug-compatible vendor. But the company must look out for the Japanese when it comes to technological competition.

The latest deals which Trilogy has made for the sale of its technology, to Sperry and DEC, two prominent American computer makers, are a sign the company knows about this danger.

"We expect to make deals of this kind with just about anybody who needs this type of technology. Except, of course, IBM and the Japanese," said Dr Amdahl.

The semiconductor industry, however, is very volatile, frequently going from feast to famine. With computer companies as customers, chip-makers are subjected to constant over-buying and under-stocking of computer component inventories, as companies try, but rarely succeed, to anticipate changes in economic cycles.

The term "chip foundry" has been used recently to describe a role Trilogy may play in the future. The words may become prophetic if DEC exercises its option to require Trilogy "at any time prior to December 31 1984 to commence the establishment of a new semiconductor design and manufacturing facility in California". Under the agreement, DEC would get up to 60% of the new plant's output.

The "chip foundry" concept will clearly be an important business element in Trilogy's plan. It represents a leverage that allows for the exploitation of Trilogy's technology beyond the means of a single computer company.

The danger inherent in this approach is that the company's resources may be spread too thinly between the computer and the chip design.

Trilogy's technology, though, may be able to perform an important integration role in the American computer industry as a nucleus of the "third technological camp", as an American alternative to the multi-national IBM and the Japanese vendors.

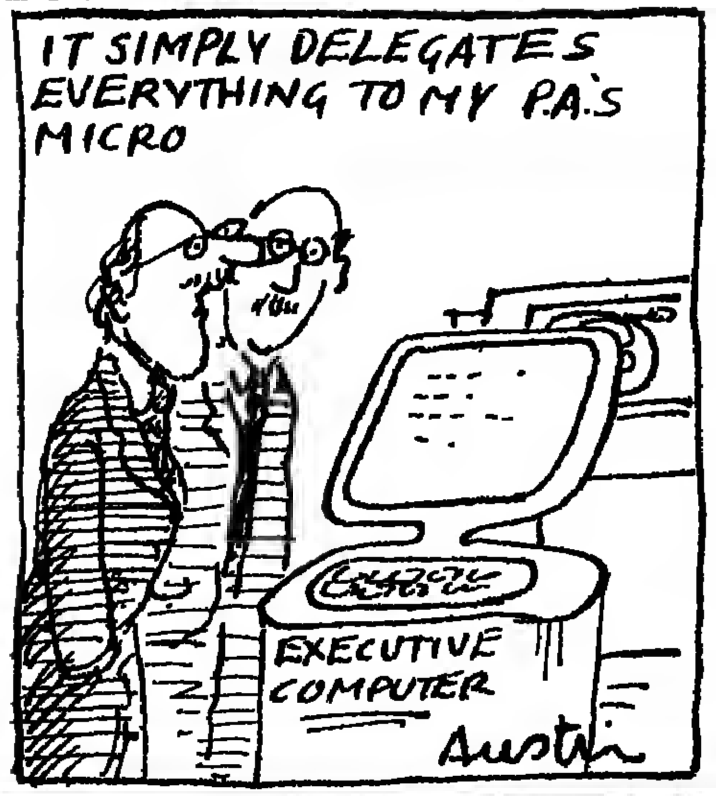
American computer companies are clearly worried about the inroads the Japanese are making. Several private R & D joint ventures have recently been formed.

These efforts, however, are beginning to resemble the style of development and operation which works for the Japanese.

Whether this kind of approach is suited to the Western mentality, which is more aware with individual rather than collective creativity, is doubtful. It is uncertain, therefore, that these joint ventures will produce the desired technological results.

Trilogy's approach, with founding entrepreneurs helping guide the ship along the way, has a better strategic chance of success.

GENE AMDAHL . . . Expects yield to be "significantly greater" than 20%.



How best to introduce technology to offices

New Office Technology. H. Otway and M. Peltu. Frances Pinter, London. £15.

FOR those sceptics dubious about the relevance of studies generated by the European Commission in Brussels, this book comes as a refreshingly sharp rejoinder.

Its editors aim to supply clear, practical and jargon-free advice to those responsible for implementing information technolgy in the office. To do this, they draw on the experience of the European Commission Insis Project (Inter-Institutional Integrated Services Information System), which was set up two years ago to establish and implement compatible office technology and communications into European Community administrative institutions.

There are 13 integrated chapters, each written by an international specialist, although weighted towards academics and social scientists in particular.

The Insis programme is currently moving out of its planning phase, and many of the findings are distilled into this book, which examines implications, change and ergonomic requirements.

In summary it argues a socio-technical approach and the main message is the importance of human and organisational factors when new technology is introduced.

The book succeeds in its aim. It is clear and readable and covers most relevant topics. There are however, some lapses into heavy academic jargon in places, and the ergonomic discussions only just avoid slipping into tedious detail on distances and measurements.

The most original part of the book is to highlight the importance of software design on user satisfaction. It emphasises that if the software in interactive dialogues is not flexible, there may be decreased job satisfaction with resulting decreased productivity.

For example, when the user is gathering information verbally for keying into the computer, stress is caused if the sequences demanded by the software are too rigid. As users become more proficient in handling the system, they should be able to use different levels of software — consequently the book calls on software designers to provide flexibility.

Another cause of frustration is getting the system response time right. Long delays infuriate users, but the book points out that response times that are too rapid can also cause stress.

The book deserves to be more than just another academic textbook and industrial management should read it in the planning stages of introducing new technology, particularly as its principles are to be put into practice in the implementation stages of the Insis project.

John Riley

Catalogue for micro users

Microcomputer Programs in Print. Owen C. Schultz. Postroad Press, Virginia.

A CATALOGUE of programs commercially available is not the most exciting reading; but likely to be a boon to anyone who makes extensive use of a microcomputer. Microcomputer Programs in Print, collated and edited by Owen C. Schultz, is such a book.

Two hundred pages detail the software available for more than 150 best-selling micros. A breadth of 280 subjects, from speech synthesisers through tax and professional business applications to engineering, are combined to make a total of 2,700 individual items.

The main virtue of the book is that any of these can be located, either computer model or subject, by using the cleverly constructed keyed index. Once found, details of the producer, names and addresses of main suppliers and prices are given.

Included too are the necessary technical details: the amount of memory required, the medium in which the program is available, any peripheral devices necessary for operation, the program language and the operating system.

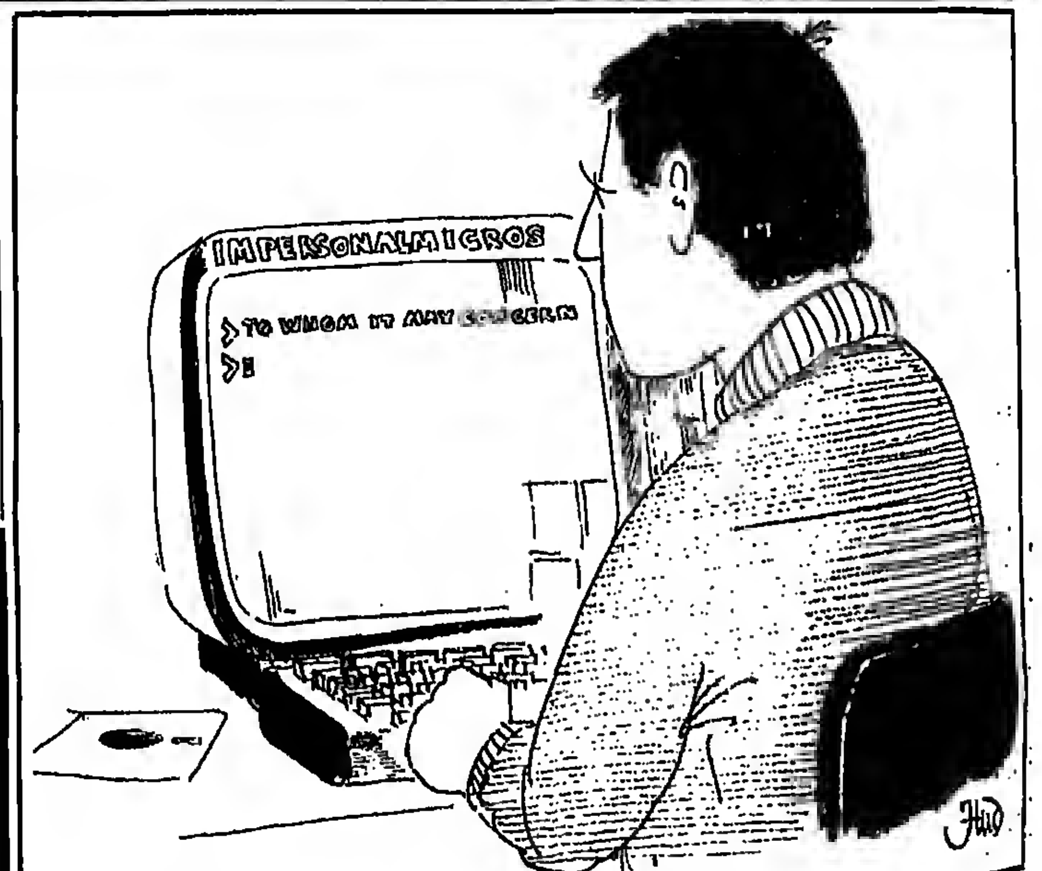
Throughout, the data is ordered and clearly printed. Once mastered, the index system is the fastest means of successfully finding information.

Regrettably, all suppliers listed are American-based. So extra costs and inconvenience may nullify discounts.

The book is not for the casual reader but for anyone who intends to install a micro system or extend the scope of a current system.

Whether such a book can be of use to you, find out for yourself by taking advantage of the money-back guarantee.

Patrick McDermott



Catering for the subsidiary course

Pascal Programming: a beginner's guide to computers and programming. Chris Hawksley. Cambridge University Press. £12.50.

IN HIS preface, Chris Hawksley, a university lecturer, explains that he was surprised to find that of the many books available on computer programming, none was to be found that satisfied the students on his own courses.

He felt that as he was teaching a subsidiary course in computing, the existing books assumed a level of previous knowledge and experience that his students did not have. So he resolved to write one that catered for people studying computer programming as a subsidiary subject, yet covering the subject in depth.

I was surprised at his claim, as I have come across some very good basic text books. However, Hawksley's book is well written and achieves his intentions.

My feeling at coming to the end of Part 1 was that I could try my hand at programming in Pascal with a great deal of confidence.

As he assumes no previous acquaintance with computers, he starts with a lucid explanation of the concepts behind programming languages. The reader is effortlessly and painlessly led from symbols and representation through data types and algorithms into the hitherto hidden mysteries of Pascal programming.

This is part of the attraction of the book — everything flows smoothly from stage to stage.

Part 2 develops the practical aspects of designing and writing long programs — the examples up to this point are fairly elementary. The going does become heavier here, but then it is a textbook, and not designed for readers covering the equivalent of several weeks' study in a few days.

Also, as it is intended to supplement a course of lectures, it is not designed as a teach-yourself manual, although it seems adequate for that purpose.

The examples throughout provide clear explanations of all the procedures, and each chapter ends with a series of exercises. As it is designed as a text book for a subsidiary course, some of the more advanced procedures are not covered, as the author explains in the preface.

It is perhaps a pity that no list of suggested further reading is provided. Hawksley's suggestions could be worth taking up.

However, this is a minor complaint about what is all in all a well-written and, most importantly, a readable book.

David Albury

Guide to good programming too academic

Guide to Good Programming Practice. Brian Meek, Patrick Heath and Nick Rushby. Ellis Horwood.

THE Guide to Good Programming Practice is written mainly by university people — and seems to be aimed mainly at university people.

This is a pity, for there is much food for thought here for experienced programmers, as well as sound advice for beginners. But the commercial applications programmer has to put up with examples written for mathematicians and a concentration on Fortran and Algol.

An informative section on structured programming looks in depth at two programs, written in Algol and Fortran. One integrates a system of differential equations using the Runge-Kutta method; the other forms a generalised inverse of a positive semi-definitive symmetric matrix.

Hands up all Cobol ledger system programmers to whom such ideas mean anything.

The book consists of 170 pages of papers by the editors and several others. The chapter on program writing has a sensible guide to choosing the right language for the job. And the program development chapter looks at structured programming, testing and improving run-time performance by optimising program code.

This is the second edition of a book which has proved popular; it was first published in 1980.

John Kavanagh

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Instant colour for personal computers

A LOW-COST interactive film recorder producing 35mm slides and instant photographs of personal computer graphics is introduced by Polaroid (UK).

Called Polaroid Palette computer image recorder, the system is designed for use with personal and small business computers to make presentation-quality colour or black-and-white graphics hard copy on new Polaroid 35mm Autoprocess transparency films and Polacolour ER 3¼ × 4¼ inch instant print film.

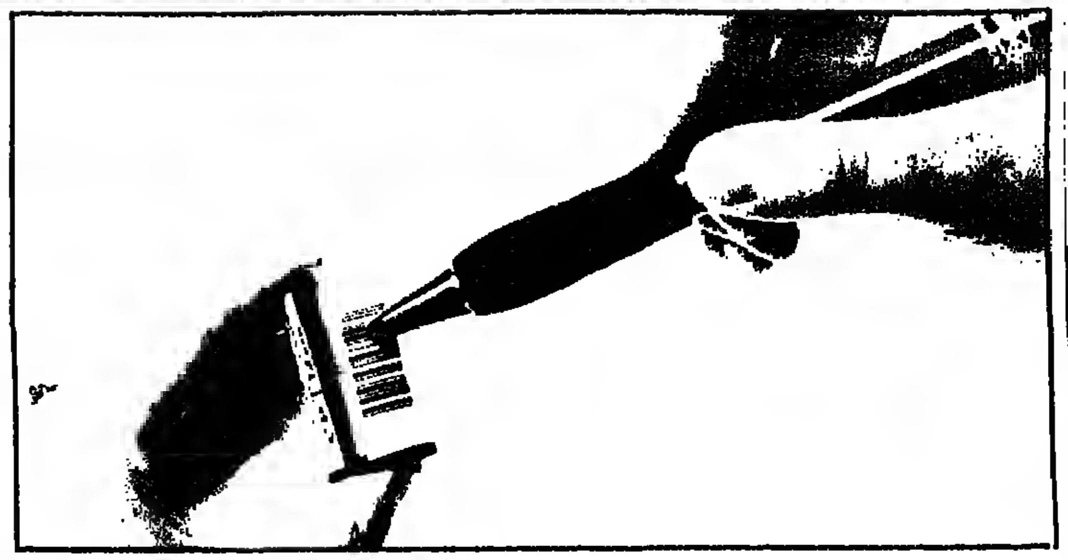
The user-friendly system connects easily to the computer by means of a black-and-white video line and an RS232C communication line. A compact, desk-top peripheral, Palette measures 16 × 8 × 6 inches and weighs 12 pounds.

Palette can be used with the IBM Personal Computer, as well as Apple II Plus and Apple IIe computers. The image recorder can be used with several existing personal computer graphics software packages, and is supplied with diskette software.

Containing a flat-faced, medium-resolution monochrome video screen with a tri-colour filter wheel, Palette allows even monochrome-display computers with graphics capability to produce colour hard copy for presentation, display, record-keeping or working copies.

The program diskette supplied with the system permits selection from a multi-coloured table for changing or adding colours on the film.

Polaroid (UK) (CW), Ashley Road, St Albans, Herts AL1 5PR. Tel: (0727) 59191.



The new Mark IX barcode pen from Skan-a-Matic.

Pen can read dot matrix code

A NEW visible-red-LED barcode pen, the Mark IX, which can read barcodes printed by ordinary dot matrix printers, is being manufactured at Skan-A-Matic's new UK facility at Brighton. Designed to read any barcode with a minimum bar width of .007", these are precise photoelectric devices with a depth of field which allows them to scan through clear protective coatings while, at the same time, compensating for "pen bounce".

Each pen contains a pre-amplifier which provides a normalised voltage output to provide interchangeability in the field without individual adjustment. This output — 250mV +10mV on 90% white reflective surfaces and less than 10mV on black surfaces or in free air — is suitable for OEMs or users designing their own equipment as well as being compatible with Skan-A-Matic conditioning and decoding circuitry.

The pens, which are roughly the size of a large ballpoint pen, are balanced for optimum manual use. The optical design allows accurate scanning even when tilted as much as 35°C away from vertical, says Skan-A-Matic.

Skan-A-Matic (CW), 40-41 Castle Street, Brighton, BN1 2HD. Tel: (0273) 21646.

TV turns out hard copies

MITSUBISHI is to market a TV set that can turn images on the screen into hard copies.

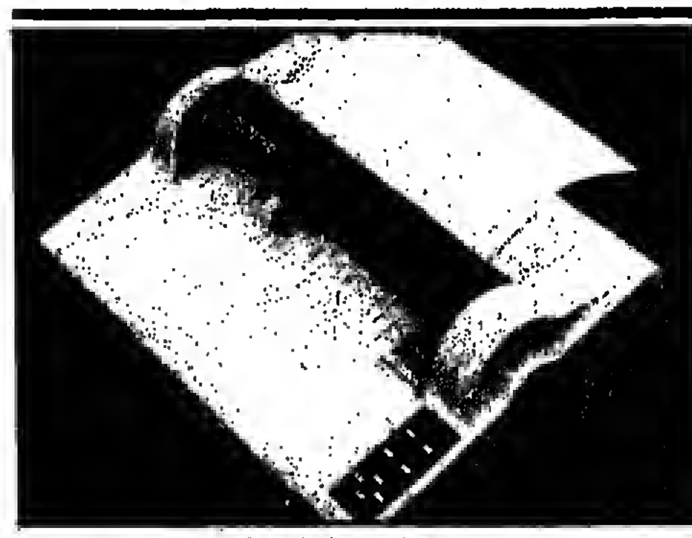
It will market domestically a printer-incorporated TV set in late October. The TV is a 21-inch type and will cost 258,000 yen in Japan.

In early December the company will also put on the market a TV printer than can be plugged into conventional TVs. The printer, priced at 69,800 yen, can also be connected to VCRs, video cameras and personal computers.

The image on the screen is converted into digital information, memorised in LSI (large scale integrated) circuits, controlled by a microcomputer and quietly printed on thermo-sensitive paper in monochrome images of 280 dots by 234 dots every 15 seconds.

The company expects the new product to be put to a variety of uses in homes and offices.

Mitsubishi Electric Corporation (CW), 2-3 Marunouchi 2-chome, Chiyoda, Tokyo 100. Tel: Tokyo (218) 2171.



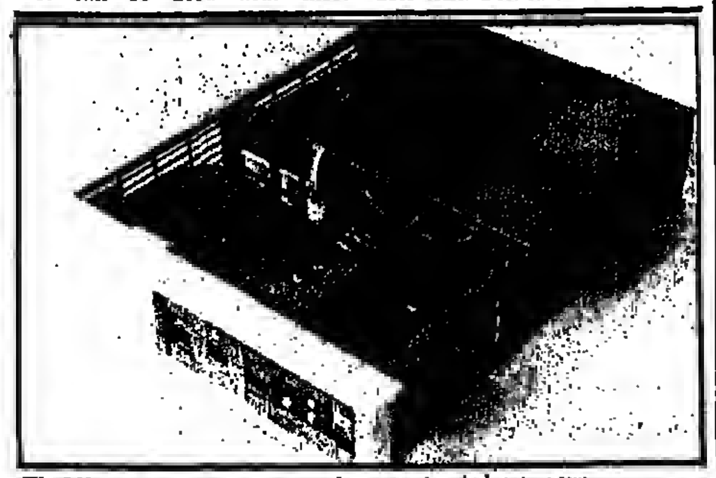
The B1000 offers four-colour plotting for £740.

Four-colour plotter

A FOUR-COLOUR plotter for microcomputers has been introduced to the UK by Encotel Systems. The company says that at a starting price of £740 the BMC B1000 is the cheapest plotter on the market with such a range of facilities.

It can be used with most microcomputers with a standard RS232 or Centronics interface, can be driven from any language, including Basic, and controlled from word processors.

Encotel Systems (CW), 7 Imperial Way, Croydon Airport Industrial Estate, Croydon, Surrey CR0 4RR. Tel: 01-680 6040.



The Micro PDP-11 comes as a rack-mounted or desk-top system.

Micro PDP-11 launch

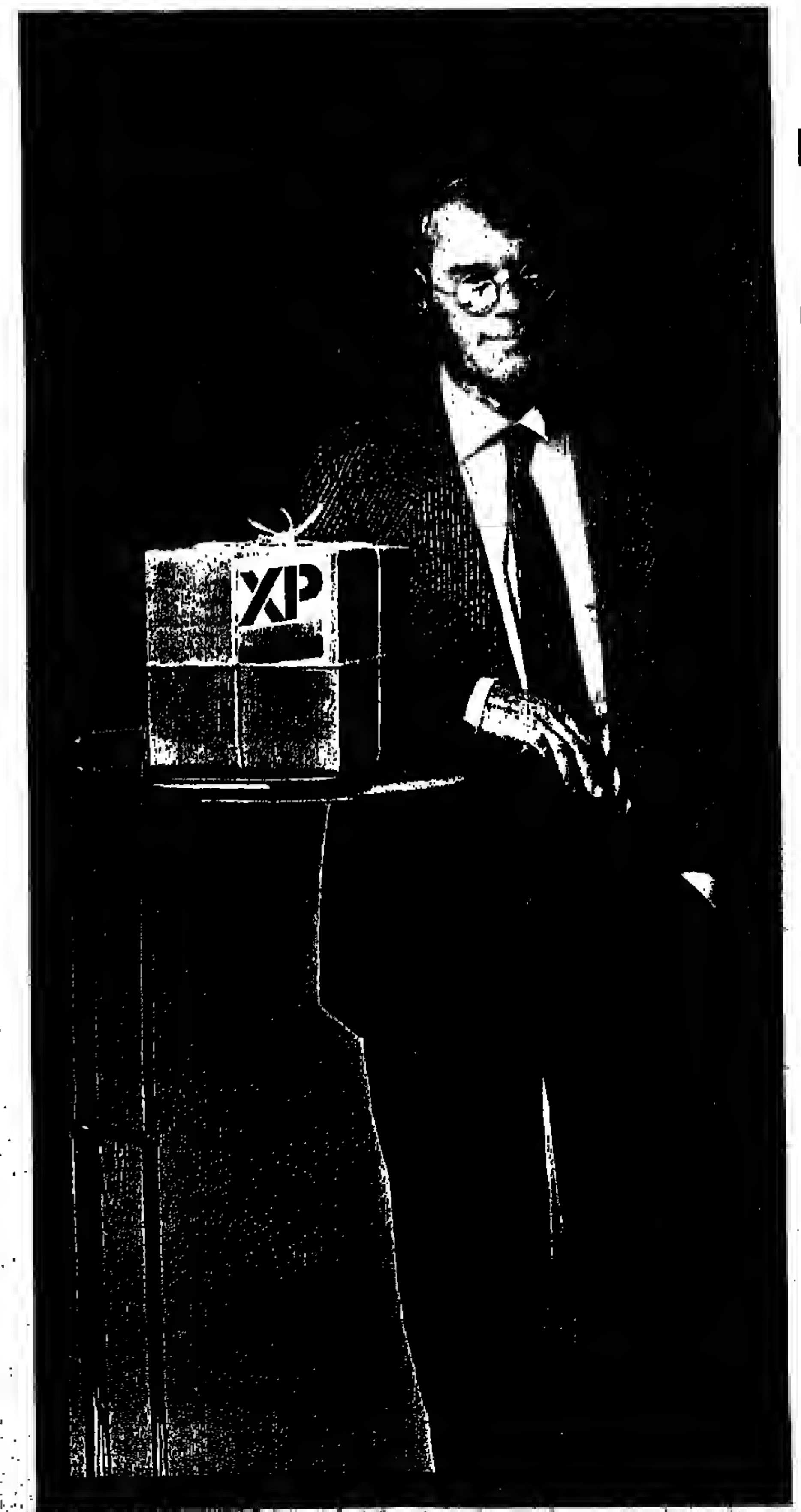
DIGITAL Equipment's Micro PDP-11 is now available from authorised distributor Rapid Recall. The machine has the PDP-11/23 Plus processor, which can support four megabytes of memory. A 10-megabyte Winchester disc and 800K of floppy disc storage can be provided as standard.

The system features an LSI-11 bus backplane with a 22-bit address bus. It can take up to 10 dual expansion boards. Rapid Recall can supply a range of boards for commercial and industrial applications.

The machine can be supplied in rack-mounted or table-top form. It fits in a cabinet measuring 62,5cm × 13.1 × 68.58.

Rapid Recall can provide it as hardware only or with a general-purpose licence and 12-month warranty. The company says the system will make a considerable impact on the small computer market. It offers a relatively simple upgrade path to bigger DEC processors.

Rapid Recall (CW), Rapid House, Denmark Street, High Wycombe HP11 2ER. Tel: (0494) 26271.



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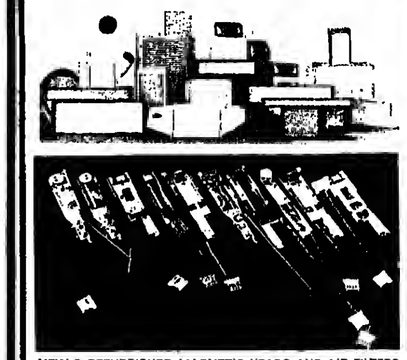

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Pragmatic Programmer

(Banking software/micro computers)

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To continue their policy of expansion, Computacenter is seeking a pragmatic person who can demonstrate experience in the following areas:

* **18 months + programming**
* **Micro computer software development**
* **Excellent communications skills**

Experience in Business Basic and/or Pascal with some exposure to Banking or Financial applications would be an advantage.

The successful candidate will initially be involved in the development of Banking software on an **Apple 3** microcomputer with further responsibilities for its implementation onto **IBM** and **Digital** machines.

The opportunities for career progression are tremendous and consideration will be given to the candidate who would be interested in a future sales career.

Find out more – phone Knight on 01-491 4706 quoting ref GKG05.

Computacenter

Analyst Programmer

(Database-Prime Info)

City — **£11,500-£14,500+benefits**

Our client is a British Oil Exploration, Production and Trading organisation with international interests. The London computer services department houses a Prime supporting 20 terminals and a range of technical and financial applications. A second Prime will be installed shortly.

They currently require an Analyst/Programmer with a good educational background and sufficient experience to take responsibility for database projects, liaising directly with users.

Opportunities will also arise to work in systems administration, telecommunications and other technical applications.

Ideally your experience will include some of the following skills:

* **Database applications**
* **INFO**
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You will be offered a salary relating to your experience, and in addition some of the benefits include free pension scheme, health assurance scheme and luncheon vouchers.

For further information and an early appointment for interview phone Knight on 01-491 4706 quoting ref YY124.

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IBM System 34 Prog and Analyst/Programmer

Nottingham — **c £10,000 pa**

Bell Fruit (UK) Limited is a well established and major force within the leisure industry.

The company is installing a newly developed distributed processing network of System 34's to support information processing for its locations throughout the UK.

The data processing department consists of a small development team who are responsible for an effective and efficient service.

To continue its policy of expansion the company needs additional professional people who can demonstrate the following qualities:

* **A sound knowledge of IBM GSD systems**
* **At least two years programming experience, preferably in RPG II**
* **Good communications skills**

You will be offered a competitive salary in line with your abilities and a real opportunity for career progression.

This is an excellent invitation to join a successful company in an attractive working location.

Find out more – contact Knight on 01-491 4706 quoting ref. GK606.

BELL-FRUIT (U.K.) LIMITED

Programmer/Analyst

Essex — **c £10,000**

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Following the recent transition from ICL to Univac hardware their computer centre is currently engaged in the re-development of a number of commercial applications.

The Programmer/Analyst will be responsible for the writing of specifications for Cobol programs and should be able to demonstrate experience in two of the following areas:

* **Minimum 2 years Cobol**
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Find out more – Contact Knight on 01-491 4706 quoting ref YY192.

Pitney Bowes

Senior Programmer

Central London — **c £11,500**

Cambridge Data Limited specialises in the supply of turnkey systems for the clothing and allied industries.

Their product range incorporates a wide variety of commercial applications eg Factory Production Control, Accounts, Stock Control and Order Processing, for **CP/M** based multi-user networks using a wide range of **micro computers.**

Cambridge Data Limited is now seeking an experienced professional to develop his/her career with a growing company.

Candidates will have experience in the following areas:

* **2-4 years with an independent Software House**
* **Micro computer systems in a commercial context**
* **All stages of installing small business systems including analysis, programming and support**

The successful applicant will be responsible for installing systems on customer sites. The job involves a considerable amount of programming and analysis.

Find out more – phone Knight on 01-491 4706 quoting ref YY190.

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City — **to £11,000 p.a.**

Our client is one of the UK's most successful Systems Houses, supplying high profile turnkey business systems to a broad spectrum of industry.

They are currantly seeking two highly motivated Programmers to contribute to the development of a **prestigious project** incorporating Financial and Payroll applications.

Candidates should have experience in the following disciplines.

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Team Leaders	**to £12,000**
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* PASCAL
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Please write with full cv to Charlie Reames, ICL, Kings House, Kings Road, Reading, Berks. Tel: Reading (0734) 586211.

We should be talking to each other. ICL

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Programmers/Team Leaders
South Coast £8-£16K

Our Systems House client is expanding fast and excellent career prospects are available to programmers with two to seven years' experience of defence and allied work. CORAL, PASCAL or FORTRAN skills are needed. New offices are being established in Southampton and staff will work there and on nearby client sites. Ref: 0809/E

Viewdata Systems Micro Programmers
Herts + Overseas possibilities £9K+

Our client is developing viewdata systems and communications links for these and other applications using X25 protocols. Knowledge of X25 and M68000 assembler advantageous but other relevant experience will be considered. Graduates with two years' programming experience preferred. Ref: 0809/F

Software Development
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This is a specialised role involving the design, development and implementation of software for diagnostic and test purposes. Candidates must be familiar with DEC PDP 11/RSX 11 and ideally have had experience of working at hardware interface level. Knowledge of PASCAL or FORTRAN would be an added advantage. Ref: 0809/G

Programmers (Comms. Software)
Middx £10,000-£14,000

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[Ref. No. 21029]

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These posts are open to both men and women.

Closing date: 21st October 1983.

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London £25,000

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CAP (UK) LIMITED
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Tel: 01-404 0911.

CAP

ANALYSTS & PROGRAMMERS

MVS TRAINING
CITY to £13,000 pa

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TANDEM/VAX TRAINING
LONDON/H. COUNTIES to £14,000

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CICS TRAINING
CITY to £10,000

A City-based International Bank housing 2 × IBM 4341's under DOS/VS(E) with CICS and DL/1, is currently recruiting a number of PROGRAMMERS, to join their MAJOR ON-LINE COMMERCIAL LOANS TEAM. Programmers with around 2 years' experience of COBOL and preferably some exposure to CICS and/or DL/1, who would welcome further training in these areas should apply now. Company benefits and scope for career advancement are excellent. Ref. A1253.

ANALYST/PROGS
CITY c.£12,500

This well known INTERNATIONAL BANK located in the city are currently recruiting BASIC Analyst/Progs. Candidates should have a minimum of 2 years programming experience, and preference will be given to people with a knowledge of PDP hardware. Benefits include subsidised mortgage, season ticket loan, pension etc. TRAINING on VAX will be given. Opportunities are also available for Senior A/P's to move into project management. Ref: F1135

ANALYST/PROGS
SW LONDON to £13,000 pa

This MANUFACTURING giant situated in South West London would like to recruit good IBM ANALYST/PROGRAMMERS, with at least 2 years programming in COBOL, and some ANALYSIS experience. They house IBM 4341 computers with CICS on-line and DL1 Database. The successful candidates will have the opportunity to become increasingly involved in SYSTEMS ANALYSIS, DESIGN and USER-LIAISON, and those with the potential will progress into management. Ref: S1311.

PROGRAMMERS
BERKS/SURREY c£12,000

Companies in the above areas have engaged our services to recruit experienced DEC programmers. Candidates should have commercial experience in FORTRAN, MACRO or BASIC+. This is an ideal opportunity for those with experience of real-time systems to advance their careers. EUROPEAN travel will be necessary in some cases. Ideal candidates should have knowledge of RSX11 or RT11 but training will be provided. Ref: F1247.

PL1 PROGRAMMERS
CITY £8-12,000

One of the largest and most successful International Insurance Broking Groups based in the City are recruiting a number of PL/1 programmers. Interesting on-line applications await you in a sophisticated environment consisting of an IBM 4341, Series 1 Micros and recently installed WANG VS equipment. Candidates with a good standard of education and between 2-5 years experience of PL/1 programming, should apply now for an early interview. Ref: A1310.

CICS TRAINING
CITY £8,500-£11,000 pa

Our client is a prestigious city-based FINANCIAL institution embarking upon a major expansion programme. They now need to recruit 2 to 3 IBM COBOL PROGRAMMERS, with 12 months to 3 years experience. The company's configuration consists of 2 IBM 4341 Mainframes, utilising DOS/VSE operating system. Knowledge of CICS on-line programming would be useful, but training will be provided where necessary. Excellent staff benefits are on offer. Ref: E1033.

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SURREY £10,000 + pa

Large international travel organisation have positions available for programmers with at least 2 years programming in COBOL on IBM hardware using CICS. Their computer is an IBM 4331, with a large on-line network of terminals, both remote and local. Wide range of interesting development work available covering various systems. Excellent salary and benefits on offer, generous WORLD-WIDE TRAVEL CONCESSIONS, free Life Assurance and subsidised staff restaurant. Ref: S1244.

SNR ANALYST/PROGS
LONDON to £15,000

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There are many new positions now available in Berkshire, West London and Middlesex for ambitious programmers wishing to increase their skills. My clients require 18 months + IBM COBOL under MVS or DOS/VSE in a commercial environment. You will be working in a development capacity, utilising CICS, DL/1 or IDMS database in the retail, manufacturing or transport industry. **REF. CW/2440/6**

ANALYST/PROGRAMMERS ESSEX £8-10,500
My client, a highly respected manufacturing company are seeking a number of Analyst/Programmers to join a major development project. You will be involved in a sales and marketing system. Two years' + IBM COBOL is essential preferably within a DOS/VSE, CICS or other on-line environment. Full range of benefits associated with a major company including staff discounts. Training in CICS will be provided where applicable. **REF. EW/2737**

PROGRAMMERS CITY £8-11,000
If you consider yourself to be an above average COBOL Programmer with at least two years' experience, on an IBM mainframe with a knowledge of DOS/VSE, MVS or VM/CMS, coupled with CICS and/or DL/1, my client would be interested in knowing about you. They offer an excellent career path for self motivated individuals with the opportunity to move into analysis if desired. Benefits and salary are those associated with a large City organisation. **REF. EW/3202.**

ANALYST/PROGRAMMER CITY To £11,000
An established international organisation based in the City have a number of superb Analyst/Programmer vacancies for up and coming D.P. professionals. You should either have a solid IBM COBOL background and have been involved in commercial work, or have a knowledge of design and/or graphics work. You will be working in an IBM 4341/3033 IMS CICS environment for which training can be provided. Excellent career prospects. **REF. EW/2821**

OTHERS

ICL COBOL
KENT To £11,000
Kent-based ICL 2960 installation is currently recruiting for ICL COBOL skills at various levels. 18 months + relevant experience preferably with DME/GII is required for the programming positions. The more senior applicants will have proven systems experience, and a solid COBOL background, and would be encouraged to move into analysis by writing their own specifications for interesting development projects mainly of a commercial nature. **REF. DW/2837/8**

PRIME FORTRAN LONDON £13,000
My client is among the most successful in the Engineering field and due to expansion is looking to recruit two Analyst/Programmers. The requirements are at least three years' FORTRAN and a sound knowledge of Prime. In addition some COBOL, BASIC or INFO experience would be welcome. This is a really superb opportunity to utilize your skills and step away from a straight Analyst/Programmer job into an extremely interesting position which will include Manager Support and the responsibility of making your own decisions and meeting deadlines. Applications are commercial of a marketing and personnel nature, and the company is currently installing a new range of micros linked to the Prime. As there could be some foreign travel involved a fluency in a European language would be an asset. For further details of this position contact us now. **REF. MW/3821**

SYSTEMS DESIGNER MIDDLESEX £12,000 +
This key position will appeal to a Systems Programmer who would welcome the opportunity to be in at the start of this company's exciting new project linked to the holiday and travel business. In addition to your sound FORTRAN experience, a knowledge of Perkin Elmer equipment and some database would be welcome plus a sound analysis background. Initially you will be working with a small team and every opportunity for advancement will be available as the company expands. Your involvement will be required in developing applications software for on-line reservations and on-line transaction processing. Also your ability to liaise with users and suppliers will be fully utilized. **REF. MW/2833**

ANY COBOL £10,000
An opportunity has arisen for two Programmer/Analysts within a prosperous multi-national organisation based in North London. They require a minimum of 18 months' recent experience using any structured COBOL, a knowledge of the UNIVAC 1100 under EXEC 8 being especially welcome. Just one of the many benefits in joining this company is the first-class career prospects and training. If you are educated preferably to graduate level and you are now looking for career advancement within a professional environment they promise an excellent starting salary and all large company benefits. **REF. MW/2744**

DATABASE PROGRAMMERS KENT/ESSEX £11,000
Candidates must have a thorough knowledge of Database techniques together with at least 18 months recent exposure to COBOL. Some UNIVAC 1100 or Burroughs experience would also be an asset although not essential. The nature of the work will be all development and on-line and the successful candidates will be expected to assist in the design of future database as well as getting involved with user liaison and providing help and advice to junior staff. An excellent opportunity for an enterprising person looking to expand his career. **REF. MW/2831**

DEC-COBOL/BASIC +£NEG
My client, a leading leisure company, seeks an Analyst/Programmer with an out-going personality who enjoys user liaison and problem solving. You must have a minimum of two years' DEC/COBOL and/or BASIC + experience. Based in Herts, you will be developing new systems from feasibility study through coding to implementation, working closely with users throughout. Working mainly with VAX machines under VMS, training will be given to good applicants with thorough PDP, COBOL/BASIC + skills. **REF. AW/2815**

MAJOR ICL DEVELOPMENTS CITY To £12,000 + Subs Mort.
This prestigious financial firm based in the City can offer exciting career moves for ICL 2900/VME professionals from programmer to team leader levels. Of particular interest are those candidates who are able to offer skills in either IQMS and/or TPMS. As a successful and progressive company they offer working conditions and excellent perks which include subsidised mortgage and excellent career path. **REF. DW/2482**

HONEYWELL COBOL MIDDLESEX £8,500
12 months+ Level 64 or 66 COBOL is required by this progressive Middlesex-based company to join their development team. TDS experience would be an advantage although not essential as this company believe in offering their staff a range of training facilities. You will be involved with a range of commercial applications from accounts to stock control systems. The company also offer sports and social club facilities and a subsidised restaurant in their package. **REF. DW/2673**

HEWLETT PACKARD ALL LEVELS To £14,000
Based in Herts, my client is seeking Analyst/Programmer with good HP 3000/COBOL expertise at any level either junior or senior. The company is expanding and there are many new development projects underway. Prospects are excellent, and management prospects are envisaged for the right applicants. **REF. AW/2816**

ANALYST/PROGRAMMER ESSEX c.£10,000
My Essex-based client is seeking Honeywell mainframe COBOL people at Analyst/Programmer level. Two years+ relevant experience is required hopefully with IQE and/or TDS. The successful applicant will have the adaptability to work on simple programming projects through to high level analysis. Applications are mainly commercial and include accounting and order processing. A good career path and attractive salary is envisaged for the right person along with a benefits package including flexi-hours, four weeks' holiday, profit share, pension and medical insurance scheme. **REF. DW/2779**

HEWLETT PACKARD – ANLY LANGUAGE To £10,500
Are you currently on HP 3000 Programmer with in excess of 18 months' experience in any language? If so my London-based client, a long established dealing concern would like to hear about you. They are currently developing new systems for both the HP 3000 and HP 250 to SPL, COBOL, BASIC and some RPG II. You will work in a small team using the latest on-line and database techniques. You can expect to progress quickly into analysis. Call me now for further details. **REF. AW/2807**
For details of our RPGII/III opportunities please see opposite page.

(5717)

ENGLEDOWN
COMPUTER PERSONNEL CONSULTANTS
Brushfield House, 12 Brushfield Street
Bishopsgate, London E1 6AN
Telephone: 01-247 3356 (24 Hours)

Institute of Aviation Medicine,
Farnborough, Hants
Ministry of Defence

Electronic Engineer

...to provide technical support for experimental research on a variety of projects such as interactive computer graphics, voice synthesis and recognition, and the man-machine interface. Work involves the design, construction and maintenance of electronic equipment, some of which is interfaced with microcomputers. Practical innovations, individual responsibility and the publication of project results are all encouraged.
Candidates should have a degree/HND/HNC or equivalent qualification in an appropriate subject. At least 2 years postgraduate experience is required for those with second class honours degree, or at least 5 years experience for candidates with other qualifications. Knowledge of microcomputers or software would be advantageous.
Appointment as Higher Scientific Officer £7145 – £9560 with starting salary according to qualifications and experience.
RELOCATION ASSISTANCE MAY BE PAYABLE.
For further details and an application form (to be returned by 28 October 1983) write to Ministry of Defence CM(S)1b3, Room 310, Savoy Hill House, Savoy Hill, Strand, London WC2R 00X. Please quote ref: SA/31/EM.

Scientific Civil Service

SYSTEMS ANALYST OXFORD
circa £10,500

The Company: Highly successful international company concerned with bookselling and journal supply worldwide.
The Job: To assist in designing effective book systems on an ICL 2958 and involving TPS and TOTAL (ICL hardware experience is not essential).
Experience:
★ Two-three years' experience in a database/online environment
★ significant involvement in at least one major project
★ good communicative skills
★ proven ability to work as part of a team
Benefits: In addition to the attractive salary the company offers generous fringe benefits which include relocation expenses

Formal applications, which should include a full c.v. and a daytime telephone number, should be sent to Jackie Gunn, Personnel Officer, B. H. Blackwell Ltd., Beaver House, Hythe Bridge Street, OXFORD
Informal enquiries should be made by telephoning Rod Archer on Oxford 244844.

(5823)

BLACKWELLS

COBOL IMS DB/DC CAMBRIDGESHIRE

Contract early start assignments at our client in Cambridgeshire developing on-line Oatebase Systems.
Candidates must have in-depth IBM COBOL and IMS DB/DC experience.

Contact Bob Carr at Fraser Williams (Hertfordshire) Ltd, 3A Canberra House, 17-18 London Road St. Albans, Herts. AL1 1LE
Tel: St. Albans (0727) 34301 (24 hr. Tel. Service)

Fraser Williams Computer Services

LIVERPOOL ST ALBANS LONDON LEEDS MANCHESTER-POINTON-BRAMHALL BRISTOL SHEFFIELD GLASGOW ABERDEEN TORONTO

(5826)

Computer Programmer
PL/1 and/or RPG11

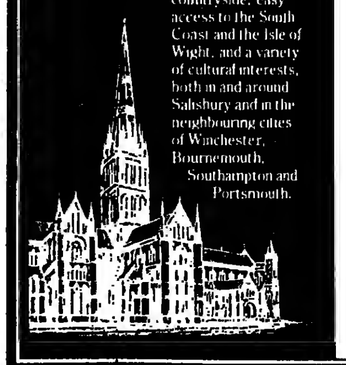
A vacancy has arisen for a Programmer with E Gomme Limited, who design and manufacture G-Plan furniture. This is an opportunity to fill a key position in a small team, dealing with a wide range of commercial applications.
All development is performed on-line for both batch and TP applications.
The installation comprises a ½ megabyte 370/125 with 3340 disks, tapes and local VDUs operating under DOS/VS.
If you have more than 2 years' experience of PL/1 and/or RPG II, here is your opportunity to fulfil a major role, reporting to the chief programmer.
Salary is negotiable according to experience.
Please write to: Company Personnel Manager
E Gomme Limited, Spring Gardens
High Wycombe, Bucks.

(5828)

Make your next career move the one that counts.

Salisbury

This delightful cathedral city is situated in Wiltshire, close to the Hampshire border and the edge of the New Forest.
Salisbury offers not only a rewarding career at UK Provident's Head Office, but also an attractive life style – glorious countryside, easy access to the South Coast and the Isle of Wight, and a variety of cultural interests, both in and around Salisbury and in the neighbouring cities of Winchester, Bournemouth, Southampton and Portsmouth.



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especially where careers are concerned. Which is a good reason for harnessing your career to the kind of success we're achieving at UK Provident.

We are one of Britain's leading Life Assurance Offices with branches in every major city. Our growth in recent years has been dynamic: premium income rose from £91m in 1981 to £142m in 1982 and achievements this year are already well ahead of our target.

We need to support the momentum produced by our sales staff by expanding our data processing services including our TP network and IDMS database. This means that there are now challenging opportunities for a variety of data processing staff to give free rein to their skills. Experience in the financial sector (preferably in Life Assurance) is desirable.

Project Leaders c. £12000 - £13000 + benefits
One to be responsible for leading a team of senior analysts and programming staff on mainly development projects in a fast-changing financial environment.
Another to lead a team engaged in all aspects of Acceptance Testing in order to ensure the smooth introduction of both new and enhanced systems.

Senior Systems Analyst c. £11000 - £12000 + benefits
To be second-in-command of the Acceptance Testing team. A knowledge of system testing is essential.

Technical Support Programmer c. £9250 - £10250 + benefits
To assist in the generation and maintenance of proprietary and internally developed software. Several years experience of ICL hardware is required, together with three of the following: VME/B, 900 or VME/B, IDMS, TPMS, DDS and SCL writing.

If you are interested, please telephone for an application form or write (giving full career details) to:

Paul Ambrose, Assistant Manager
(Recruitment and Personnel Administration)
UK Provident, United Kingdom House
Castle Street, Salisbury SP1 3SH
Telephone: (0722) 336242

Success you can share **UK Provident**

RPG II/III

IBM SYSTEM 34 **c£12-13,000**
An outstanding opportunity has arisen with a London-based company connected with the oil industry. They require an additional Analyst/Programmer with 18 months + IBM System 34/RPG II experience. You will be working in a team where you will be involved with the development of a Management Reporting System so if you want to join a highly-motivated team of D.P. professionals, where promotion prospects are unlimited, plus the opportunity to travel abroad at a later date then why not give me a call to arrange a confidential interview. **Ref: GW/2692**

IBM SYSTEM 34/RETRAIN 38 **CITY** **c£10,000**
A highly successful software consultancy based in the heart of the City are seeking to recruit an IBM System 34 RPG II Programmer. The company are currently in the process of the development of new financial systems, both on the IBM System 34 and 38 therefore full retraining on the IBM System 38 will be given. You will be ideally suited if you are an experienced RPG II Programmer with the desire to become involved with the latest on-line techniques. You will be well rewarded in terms of conditions and salary. **Ref: GW/2000**

PROGRAMMER/ANALYST NORTH LONDON/HERTS BORDERS **£9-10,000**
This successful international group are planning to develop major new systems which has led to an opening for an additional Programmer/Analyst with an IBM System 38/RPG III background, although an experienced IBM System 34 Programmer would be strongly considered. The candidate chosen for this position will initially be programming, and at a later date move into analysis where you will be sent on full IBM courses. Excellent benefits are offered and relocation assistance is available where necessary. **Ref: GW/2733**

IBM SYSTEM 38 **CITY BANK** **To £11,000**
A superb position has arisen with a major City Bank for an IBM System 38 RPG III Programmer to take up a key position within a small team developing financial and banking systems to a very high standard. The essential requirements are for a self-motivated D.P. professional, with at least 12 months' RPG III experience gained within a well-structured environment. A full banking package is offered including subsidised mortgage. **Ref: GW/2612**

IBM SYSTEM 34 **CITY** **c.£13,000**
An opportunity exists within a prestigious international bank for a capable and experienced Analyst/Programmer to move into a supervisory role. The successful candidate will lead a small team of 4 people currently involved in the development of major new on-line systems. 3-years' programming experience is essential with a minimum of 12 months' IBM System 34 RPG II. This is an important position and career prospects are excellent for the right person. Full banking package is offered including subsidised mortgage. **Ref. GW/3330**

For more details of these and other outstanding opportunities, contact Carol Gormer, our GSD specialist, Engledown Computer Personnel Consultants, Brushfield House, 12 Brushfield Street, Bishopsgate, London E1 6AN. TELEPHONE: 01-247 3356 (24 hours).

ENGLEDOWN
COMPUTER PERSONNEL CONSULTANTS

(5844)

CONTRACTS

IBM SYSTEM 34 RPG II + COBOL ANALYST PROGS LONDON
DEC DIBOL CTS 500 ANAL/PROG KENT
IBM COBOL IMS DB/DC ANAL/PROG SURREY
IBM SYSTEM 38 RPG III + MAAPICS ANALYST/PROG SUSSEX
IBM COBOL/SSEMBLER PROG KENT
IBM DOS/VSE VM SYSTEMS PROG SURREY

For further details contact NIC POLAND TCP

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CAN YOU DO OUR BUSINESS ?

LONDON S.W.17

The South West Thames Regional Health Authority requires additional staff within COMPUTER OPERATIONS. To be based at their regional computer centre located at Springfield Hospital, Tooting, London S.W.17.

Computing Services are based upon ICL 2966 and 2956 MAINFRAMES running under GEORGE 3/DME which provide financial, medical and managerial information to the region.

DEC VAX MINI-COMPUTER are currently being installed to provide On-line patient administration. Direct Data Capture and Database facilities to hospitals within the region.

A two-shift system is in operation, and where* indicated the quoted salaries include London Weighting and shift allowance. Additional benefits include excellent recreational facilities (both on-site and nearby), coffee lounge and modern offices.

OPERATIONS CONTROLLER £11,237-£14,029*

An operations professional is required for this post. Reporting directly to the Operations Manager the successful candidate will be responsible for the shift management of up to 40 personnel and the co-ordination of all activities within operations, including Data Control and Data Preparation.

Applicants must possess proven managerial ability with good communicative skills, both verbal and written. *An in-depth knowledge of ICL 2900 hardware is essential.*

COMPUTER OPERATOR £6,820-£8,000*

An experienced George III operator is required to fill this vacancy. Experience of working in a busy medium/large installation would be an advantage, although this is not essential.

OPERATIONS SUPPORT CLERK £6,667-£9,151

Previous experience in operations is required for this new post to assist the Operations Support and Liaison Officer.

Candidates must possess an in-depth knowledge of ICL utilities and job control language. An ability to communicate clearly and effectively is essential.

DATA CONTROL CLERK £6,820-£8,000*

A vacancy exists for an experienced Data Control Clerk with a good knowledge of GEORGE 3 JCL and a sound understanding of data control standards and procedures. Suitable trainees will be considered.

DATA PREPARATION SECTION LEADER £5,683-£6,667

An experienced person is required to lead a team of up to 10 Punch Operators. Previous supervisory experience is essential, and a knowledge of CMC 5200 equipment would be an advantage.

DATA PREPARATION PUNCH OPERATORS £4,871-£5,443

Vacancies exist for Punch Operators with good *key depression speeds. (10,000+). Experience of CMC* equipment would be an advantage. A bonus scheme is in operation.

For further details contact:
Norman McGregor, SWTRHA, Regional Computer Centre, Springfield Hospital, 61 Glenburnie Road, London S.W.17. Tel: 01-672 9988

(6810)

Senior Systems Programmer VAX/VMS

INMOS is now firmly established as a world leader in high performance memories and is about to enter the micro-processor market with a range of innovative products for 'next generation' systems.

We have advanced design and manufacturing facilities in the UK and the US, supported by a worldwide sales and marketing organisation. Our Information Systems group is key to these activities, with responsibility for our multiple VAX configuration, extensive telecommunications network, CAD/CAM applications and office automation.

INMOS is expanding rapidly and as a result we have an outstanding opportunity for a Senior Systems Programmer to join the Technical Support group of the Information Systems division, based at our UK Technology Centre and corporate headquarters in Bristol. As a member of a small team, you will be responsible for the development and implementation of systems and utility software and for performance monitoring, optimisation and day to day running of the computer centre and European data communications network. In addition, you will provide guidance on systems related software to a diverse range of users at all levels of the organisation.

You must have had at least two years' VAX/VMS systems experience and have a sound knowledge of FORTRAN. DECNET, COBOL and BCPL knowledge will be an advantage. Adaptability, good communication skills and the ability to work under pressure in this stimulating and technically challenging environment are essential.

Our requirements are exacting but if you meet them we can offer an excellent salary and benefits package and the opportunity to progress your career in one of the most technically advanced companies in the semiconductor industry.

Telephone for an application form or send full details of qualifications, experience and salary to: Jacqui Porter, Personnel Services Manager,

inmos

The name for the future.

INMOS Limited,
Whitefriars, Lewins Mead,
Bristol BS1 2NP.
Tel: Bristol (0272) 290861

IBM Programmers

£ooking for a new career?

With an IBM 30nn or 43nn environmental background and a year or more of PL/1 or COBOL experience, you are a highly sought after individual. Add some knowledge of CICS, IMS or DL/1 and an even wider range of opportunities lies at your feet.

That is not all – those RPG experts working with IBM System 34, 36 or 38 kit are also in the running for some very attractive propositions.

Our banking and finance clients in and around London are urgently in need of programmers, analyst/programmers and systems analysts to work on a very wide variety of interesting projects. Each installation with which we are dealing has adventurous and expansive long term development plans offering you not only the opportunity of an excellent career but also the chance to acquire valuable business and applications experience.

Working conditions are excellent and salaries are most competitive, ranging from £8,000 p.a. upwards, plus typical banking benefits packages.

ACR **Allmand Computer Resources Ltd**
15/17 City Road, London EC1Y 1AA. Telephone: 01-638 8411 or 01-920 0801 (24 hr)

Please send your Curriculum Vitae or telephone Lynn Roylance for an application form

Emp. Lic. No. SE 6583

London to £18,000
This is a particularly attractive part of the computer industry combining, as it does, the areas of international high finance and constantly improving computer communications systems. Our client has a lengthy background in this area using DEC equipment and now requires additional development and support staff. Good commercial *experience in banking or finance* is the major requirement.

Herts. £9K-£12K
Continued expansion of our client's system software development has resulted in a number of vacancies for enthusiastic and, above all, outstanding systems programmers and engineers. Opportunities exist in many areas including compilers, application tools, transaction processing, comms., etc. We can introduce you to genuine career *opportunities offering* significant responsibility at the leading edge of technology.

Sussex £10K-£15K
Recent major changes to our client's product range necessitate the recruitment of experienced real-time programmers with a background of at least 3-4 years using PASCAL, preferably with Motorola processors. Particular applications include process control, fail-safe error recovery, advanced diagnostics and self-test and *on-line communications to* micros and minis.

Herts. to £14,000
We are seeking a very experienced person in the area of real-time control systems to solve a range of market needs in the process control field. Candidates must be capable of new product specification and overall systems design. They will follow products through from specification to market launch ensuring continuing product *compatibility.*

Berks. to £15K + car
We are seeking candidates with 4-5 years experience in an IBM/CICS environment using DBMS to provide pre- and post-sales consultancy for a prestigious company. You must be a self-starter, have a good client manner and be familiar with assembler and a 4th Generation language (e.g. MANTIS). High rewards await outstanding applicants.

Bucks & N.W. to £16K + car
Continuing expansion in this highly successful manufacturing company opens the door *for software people with experi*ence in on-line D.P. systems, T.P. and comms. Candidates will be expected to assist clients with applications development, perform sizing as required and generally act in an account manager capacity. Excellent prospects and reloc. assistance where appropriate.

Cambs/M'chester package c£12K + car
Continuing expansion and promotion have created vacancies in this highly successful communications products company. Although data comms. experience preferred we would be interested in applicants with experience as Field Engineers for computer manufacturers. Candidates need to be self motivated with a good client contact manner.

Middx. £10K-£15K
Two vacancies exist in this development group responsible for the production of Advanced *Signal Processing* and CAD systems. Packages will include UNIX-compatible Operating Systems, LAN, compilers, high-speed interactive graphics and Videotext look-alike software, using PASCAL and BCPL on Special Processor and system architectures. Degree (or equivalent) and expertise in BCPL and disc-based O.S.'s is essential.

Berks. £9K-£12K
A successful company with a product having a special place in the communications and *travel industry, requires several* programmers at different levels to join existing development teams. Areas of relevant expertise include Z80 Assembler, PDP11 systems, UNIX and 'C', PLZ, Viewdata, CP/M, comms. and travel agency applications. Excellent benefits include special holiday discounts.

Herts/Beds. to £14,000
Develop your career and your communications software skills by joining a company whose *existing range of comms. soft*ware is second to none. There are a number of teams working on various developments covering LAN's, X25 and 3270 compatible products. Development is on mini and micro systems in assembler and high level languages. Reloc. assistance where appropriate.

Systems S/W Development
Oxon/Berks. to £14,000
For anyone who can show 1 to 5 years experience in compiler techniques, software tool development, Artificial Intelligence or scientific programming, here is an excellent opportunity to broaden your experience and advance your career with a *respected and successful sys*tems house. VAX experience would be advantageous. Rewards according to experience and ability.

Sen. Systems Engineer
Herts. c£10,000
Our client is currently seeking hardware engineers with four or more years background in microprocessor or complex logic design to participate in the development of a new series of minicomputers and associated peripherals. You should be *able to demonstrate project* leadership ability and a sound understanding of peripheral and communications interfaces.

Videotex Development
London to £16,000
Attractive positions exist for software professionals in the further development of viewdata products and related technologies. Currently using PDP11 and VAX with RSX11 and VMS but shortly adding UNIX and 'C' for development tools. *Fortran experience would be of* immediate interest. Positions range from development to project management in a customer environment.

UNIX Designers
Herts. c£12,000
Joining a new development team offers extra opportunity. New product development offers a design challenge and the area of office systems products offers the growth market for the future. All of these are open to skilled operating system *software designers with some UNIX* experience. Our client is large and successful. They offer long term prospects.

Technical Authors
Beds/Herts. £9K to £12K
These are no ordinary positions; we are convinced that any technical authors who are seriously interested in developing careers with leading companies in the computer industry should be talking to us. Our clients are seeking experienced *authors who can work closely* with software and/or hardware development teams to prepare user manuals and operating instruction texts.

Sen. Elect. Engineer
Berks. £10½K-£12K
The small research unit of a major multinational company currently requires an electronics engineer with 3-4 years experience of digital circuit and computer systems design. You will be supporting the development of image processing and data base applications – orientated systems, designing special-purpose hardware, evaluating equipment etc. Assembler experience a great advantage.

Tandem Development
Middx. £7K to £12K
Opportunities to work on Tandem computers without previous Tandem experience are uncommon and extremely attractive. Our client wishes to meet genuine systems software development people who are keen to develop their careers in a software products company. If you have one or more years experience using assembler and a high level language we would like to hear from you.

Real-time Specialists
Hants. £13K-£15K
Does your background in systems design and programming include experience of CORAL, MASCOT, INTEL 8086, Vax or Quality Assurance? Outstanding opportunities exist with our client for technical specialists to undertake various activities including software Q.A., consultancy, proposal preparation, etc. with the option of moving into project or general management. These positions offer significant scope for career development.

Systems Consultants
Middx. to £30,000
A rapidly expanding computer services and consultancy company requires top level specialists in data communications, distributed processing and electronic point of sale systems. Successful applicants can expect to become involved in any or all activities from: Consultancy, project management, system design, program development, system testing, installation and education. Rewards will be consistent with the level of experience.

Sen. S/W Designers
Beds. to £16,000
An established centre of software development for advanced mini computer systems has identified the need for a major new product. Several very experienced software implementors are required to work together to design and build this product. Most appropriate areas of previous experience are T.P. monitors, comms. and O.S. We wish to hear from people with 6+ years experience.

Open letter to technical and commercial job seekers at all levels:
We are here to help you. Our free service to you is advice and counsel in identifying the most suitable position for the development of your career. Our consultants have held senior positions in the computer industry. They have the experience to understand your needs. If we do not have the position you want, we are prepared to help you find it. Why not accept this invitation to talk over your ideas with us.

Write or telephone (02403) 28383 during office hours –
We are always ready to discuss these and many other interesting positions.
Evenings and weekends only.
Terry Harvey – Great Missenden (02406) 4705
Brian Coates – Chesham (0494) 785722
John Barker – Camberley (0276) 61297

(5871)

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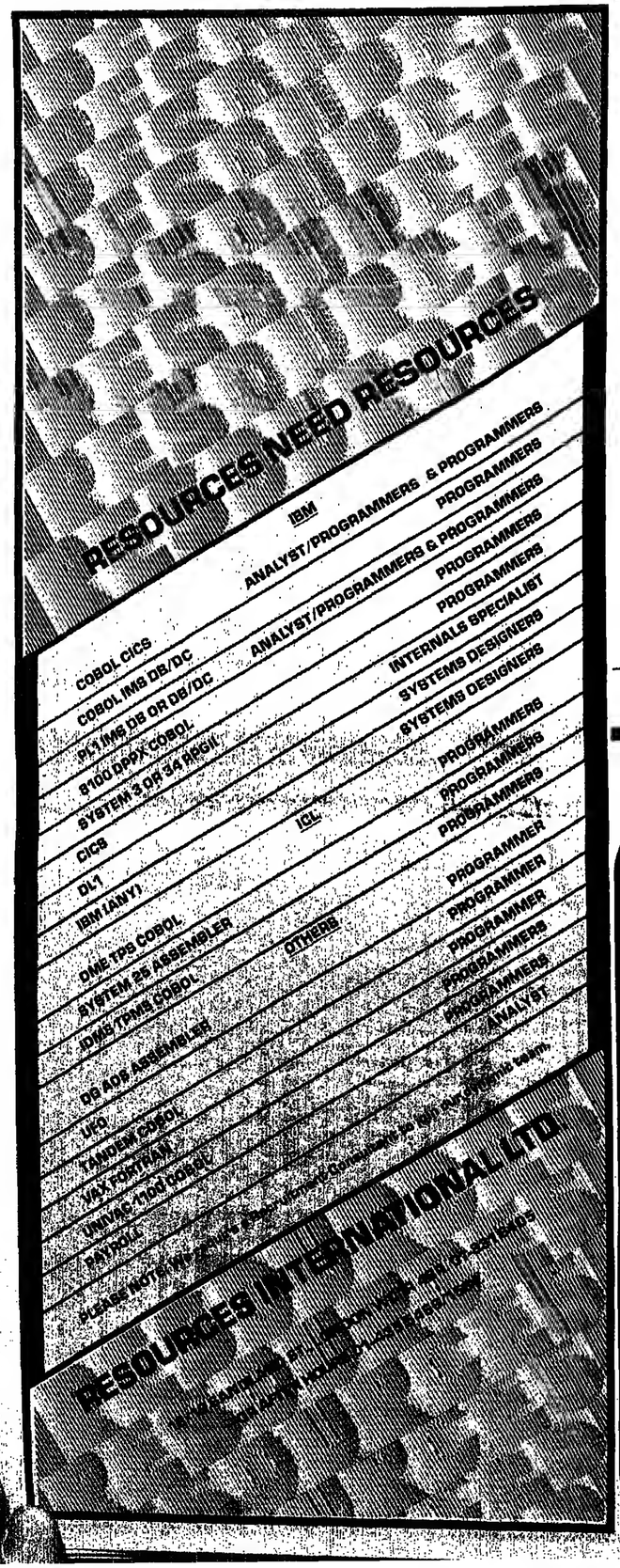

Manager Computer Operations

c. £18,000

You are e computer professional through and through. You know that you have the ability, experience and maturity to head up an Operations team. You also know thet you are ready to take a major step forward on your career path.

As Menager Computer Operetions, you will report to and deputise for the Head of Computer Services. The person we ere seeking should be capable of succeeding to this more senior role after demonstreting successful management of Computer Operations – the provision of cost-effective services which support the daily settlement of deels on the lrading floor of The Stock Exchange.

Sound experience of IBM equipment, software and business practices is essentiel, end you should be fully conversant with MVS systems end dual processing operation. In addition to technicel knowledge, great emphasis will also be placed on man-menagement skills, and epart from successful liaison with user departments and suppliers, you must heve the ability to maintain the complete support of the Operations staff.

This is en opportunity providing excellent career prospects. The starting salary will be in the region of £18,000 p.a., and the benefits will include a fully-paid season ticket, non-contributory pension scheme, 25 days holiday, lunches and flextime.

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Search Consultants

Lloyd Chapman Associates provide comprehensive and efficient assistance to clients in every aspect of the recruitment process, both in the UK and internationally.

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To satisfy the increasing demands for our services, we are now seeking to appoint two self-motivated individuals within our Data Processing Division.

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plus energy, ambition and determination coupled with good inter-personal and organisational ability

Remuneration – the people we are seeking will be disappointed (and so will we) if they earn less than £14,000 during their first year. A very attractive package, based on performance, enables a successful consultant to earn in excess of £25,000.

We are a young company – we expect our consultants to become actively involved in the running and organisation of the business and opportunities for progression into management are excellent.

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(5636)

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BOB BOWER
ADVISING DIRECTOR

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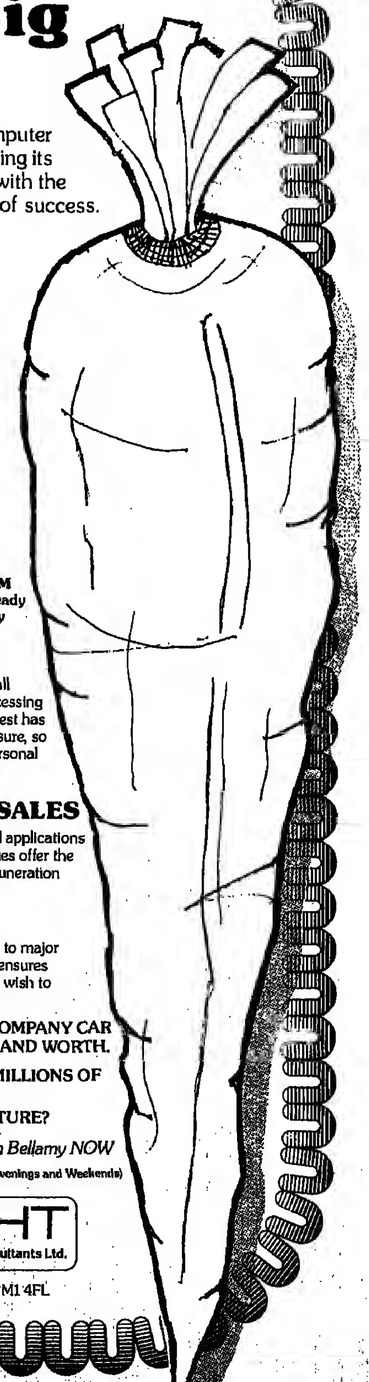

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A competitive starting salary will be supported by an excellent benefits package which includes relocation assistance where appropriate.

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dub Diyar United Trading & Cont. Co.

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Interviews will be held in London. Please send completed C.V., telephone number, address and if possible Telex No. to:

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Hawalli – Kuwait

(6815)

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Requirements

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Tel: (0202) 292373 ext. 4444.

Abbey Life

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+ Banking Benefits

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To find out more about this excellent career opportunity please contact SEAN ORSLER on 01-404 4821.

404 4821
Apex

Apex Computer Recruitment Ltd.
London Office: 59 Grays Inn Road, London WC1X 8TL. Tel: 01-404 4821.
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Advanced ergonomically designed terminals
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- Systems Analysis
- Mini Computers
- Project Management
- Telecommunications
- Sales Support

Systems Advisers

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- Systems Analysis
- Mini Computers
- COBOL programming experience

Senior Programmer/Analysts

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These roles will assume the principal technical responsibility within the Group. The following expertise is required:

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- Real time commercial applications experience
- Experience of structured programming
- Telecommunications

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INTERFACE
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RAMIS	Programmers (Urgent)
IMS, DB/DC, COBOL, MVS	Programmers
FCS/EPS	Analyst/Programmers
RPG III	Analyst/Programmers

ICL

COBOL, TPS	Programmers (Urgent)
COBOL, IDMS, TPMS	Analyst/Programmers (Urgent)
COBOL, IDMS, TPMS	Designers
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GEORGE, COBOL, PLAN	Systems Strategy Consultant (Trinidad)
COBOL, IDMS, TPMS	Database Administrator

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Ask for **John Ford** quoting reference **CW/06/10** to learn more about these opportunities or write enclosing CV to:–

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Facing the future with confidence and with an up-turning orderbook, our expanding computer department, utilising an IBM 4341, DOS/VSE with CICS and IDMS, plays a vital role in running the business which produces the finest car in the world.

We now require a Senior Systems Project Leader to join our Systems Development team and spearhead developments in several key areas.

Well supported by other DP staff and reporting to the Systems Manager, you will be responsible for a range of projects from feasibility to implementation.

Ideally in your thirties, you will have a proven systems background in a manufacturing or distribution organisation, with demonstrable and proven experience involving successful completion of at least one major project. Preferably, you will have used Database skills and designed TP Systems in an IBM hardware environment.

With application experience in any combination of the following areas, you will be at a distinct advantage: production control/MRP; marketing; warehousing and distribution.

Career prospects are good for an enthusiastic, innovative man or woman and a competitive salary will be offered to a candidate of the right calibre.

Company benefits include a 4½ day working week, a preferential car purchase scheme and extensive sports, social and recreational facilities.

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Please telephone or write, quoting Ref: C W. to Mr. D. Roberts, Personnel Department, Rolls-Royce Motors Limited, Crewe CW1 3PL. Telephone 0270-255155 Ext 3311.

We do not wish to receive enquiries from other publications or agencies.

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SYSTEMS & PROGRAMMING

SYSTEMS PROGRAMMERS
LONDON & HOME COUNTIES — **£16000+2 litre CAR**

Leading independent support company seeks to recruit several Systems Programming professionals to service their rapidly expanding client base. Excellent rewards and career prospects. Candidates must have a minimum of 2 years' DOS or MVS systems programming experience. Ref: T2055

SYSTEMS ANALYSTS
MIDDLESEX — **to £14000**

Major company wishes to recruit several self-motivated and experienced Systems Analysts to embark on a whole range of exciting projects. The positions offer genuine opportunities to those seeking to broaden their skills and work on state-of-the-art systems. For more details, please phone immediately quoting the reference below Ref: T2179

MVS SYSTEMS PROGRAMMER
SURREY — **c £13000+MORTGAGE**

Our client, an international finance company retaining an IBM 3033 under MVS utilising TSO, ACF/VTAM, NCP & CICS, seeks to recruit an MVS Systems Programmer. You will be involved in the generation and maintenance of operating systems and associated utilities, reporting tools, access methods and communication programs. Candidates for this position should have 2 years'+ experience within systems programming together with a knowledge of Assembler and MVS. Superb benefits package. Ref: M2188

PROGRAMMERS

SENIOR PROGRAMMERS
CENTRAL & GREATER LONDON — **to £12000+CAR**

Several self-motivated COBOL professionals are required by this well established software house to work on a variety of projects at their prestigious client sites. Applicants should have a minimum of 2 years' COBOL experience. Ref: T1984

PL/1 PROGRAMMER
MIDDLESEX — **£9000-£12000**

Do you have 18 months+ experience as a PL/1 Programmer and wish to join a company offering real career prospects, coupled with involvement on exciting development projects. If so, then this leisure services company housing an IBM 3033 with MVS, VM/CMS, TSO & RAMIS would like to meet you. Some assignments will involve programming in COBOL and full training will be given in this area. Ref: M2129

IBM COBOL ANALYST/PROGRAMMERS
ESSEX — **£8000-£10000**

Due to further computerisation of their financial systems, this Essex-based manufacturing company has a requirement for IBM Analyst/Programmers. Applicants should possess 18 months+ COBOL programming expertise and preferably online development skills although the company are willing to train successful candidates in CICS, DL/1 and Analysis. Excellent career prospects and the opportunity of occasional overseas travel. Ref: M2100

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LONDON W1P 9AF
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SENIOR PL/1 PROGRAMMERS

FINANCIAL SECTOR

ATTRACTIVE PACKAGE

Our client is a leading finance house and a member of a major Group. With systems development proceeding at a healthy rate they would still like to talk to Programmers with a solid (two-three years) background in PL/1. Also of interest are candidates from a large scale OS or MVS environment who have had some exposure to design and structured programming techniques for the development of on-line systems. In return for this kind of experience our company will provide ample scope for personal and career growth with talents and abilities being recognised and stretched. As far as the financial aspects of a future with this particular company are concerned, we believe it will be very difficult to improve or even match the package offered and are confident that successful candidates will enjoy a career that is rewarding in both senses of the word.

INTERNATIONAL CONSULTANCIES

ANALYST/PROGRAMMERS

£10K-£20K + EXPENSES + TRAVEL

Several of the larger, well-established consultancies are currently undergoing massive recruitment campaigns. Their requirements are as FLEXIBLE as your needs. If you have any of the following attributes – COBOL, PL/1, CICS, OL/1, VAX/POP, ADABAS, IOMS, IMS DB/DC, EASYTRIEVE, VOLLIE, ROSCOE, RPG II or III, AOF, TSO/SPF, UFO, MK IV, SHADOW, AOS/O – you could soon be working in this fast and rapidly expanding environment. Obviously the more versatility you can offer our clients, the better the salary they can offer you. At a more senior level, salaries can be up to £20K plus expenses and European travel. These are ideal opportunities for programmers with around two years' experience wishing to expand their knowledge, as extensive TRAINING will be provided. If you're interested in getting out of that day-to-day end-user rut, contact SIMON KONING to discuss these exciting opportunities further.

ANALYST/PROGRAMMER

LONDON TO £12,000

An international pharmaceutical company based in London are in the process of developing major new on-line systems. The current configuration comprises of an IBM 4341 running under VM/CMS, using CICS and OL/1, with proposals to implement new utilities such as MANTIS. They now require an Analyst/Programmer with a good COBOL background to assist in the implementation of the new systems. The ideal candidate should not have less than one year's COBOL programming experience with some exposure to an on-line and database environment, although for the right person, extensive training will be provided. This is one of the few major companies that offer a structured career path into an area of DP of your choice, i.e. pure analysis, or a more technical role such as systems programming. Company benefits include THREE SALARY REVIEWS a year; family BUPA and if you like GOOD FOOD, a FREE three-course lunch. Food for thought!! If you're interested to learn more about this exciting opportunity, then call me, SIMON KONING.

PROGRAMMER/ANALYST

LONDON AND HOME COUNTIES £9-£16,000

Three of our clients have asked us to identify candidates to help them fill some urgent requirements within their existing DP departments. The first is a MULTINATIONAL ENGINEERING COMPANY that still retains a friendly but hard-working environment. The work falls into two phases and with a GENERAL COMMERCIAL APPLICATIONS background and some experience of ENGINEERING you will have the RIGHT experience. Development work is carried out on a PRIME with FORTRAN, BASIC, COBOL and INFO and other MINI experience would be useful. The positions are LONDON based and the salary range is £10,000 to £12,500. The second is a major ICL site, who have many openings. PROGRAMMERS are needed who can capitalise on their own personal skills preferably with VME 2900, VME/B experience. The work is both interesting and rewarding and depending on skills the salary range is between £8,500 and £16,000. Thirdly REALTIME SOFTWARE and HARDWARE ENGINEERS are required by a very successful manufacturer and systems house. ASSEMBLER skills or GRAPHICS experience with OEC or INTEL is of interest as is experience with PASCAL and "C".

TCR

Targa Computer Recruitment

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SNR SYSTEMS ANALYST /ANALYST PROGRAMMER

Herts/Essex Border to £12,000

International Distillers and Vintners (I.D.V.), part of the Grand Metropolitan Group, commenced a major investment program to bring DP services in house two years ago. To maintain the impetus of development they now need two additional experienced systems professionals.

Based at the central office you will join a small dedicated team working directly with the users on the development and implementation of major commercial systems. Hardware is an IBM 4341 group 2 running under DOS/VSE with Data General Novas and Eclipses in the distribution centres. The programming language is Cobol with extensive use of CICS and OL/1

To rise to the challenge of working within this exciting environment you should have had around four years total DP experience covering both programming and systems. Exposure to CICS and OL/1 would be a considerable advantage, however, the major requirement is for business awareness. Applicants who have not had this experience but who believe they can mature in this dynamic environment should apply as opportunities exist at slightly lower level.

The benefits of living and working in this pleasant rural environment do not stop with the challenge of the DP department. The company recognises that employees have a life outside the 9-5 routine and the additional benefits cover holidays, travel and product discounts. There is a subsidised restaurant, and bar, on site and a very active sports and social club.

Ring David Mason Johns at KPG or on 01-747 0969 to arrange an early interview in London or Hertfordshire/Essex.

Please quote Ref. 8228/CW.

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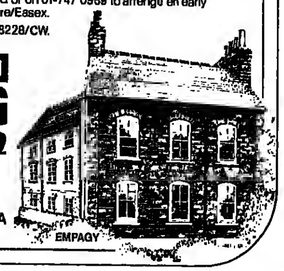

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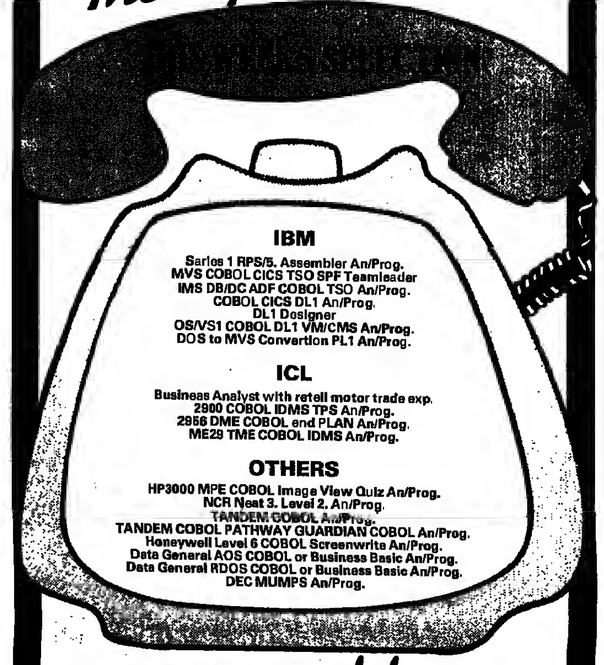

IBM

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TECHNICAL CHALLENGE & VARIETY
MAINFRAME WITH MINICOMPUTERS
EXTENSIVE COMMUNICATIONS NETWORK

You would be working in a small technical software support team, forming an important part of our clients' modern mainframe installation, where high standards are maintained and up-to-date methods are used. The appointment offers:

- real potential for creative people to make a positive contribution
- varied, challenging work, including operating system enhancements, performance measurement, development of in-house software, problem solving and technical advice to users
- training in the latest techniques, including database and TP
- sound career prospects – if you have management skills, you could be appointed to a team leadership post.

This opportunity will interest specialists with significant mainframe software programming experience; including VME/B, and ideally TPMS or IDMSX.

Please ring us for a confidential exchange of information, quoting ref. 199. Messages will be recorded after hours.

EDP SYSTEMS 01-637 5796
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logica

ICL 2900 Specialists

All levels to A$40,000

Logica's highly successful Australian company is now looking for further staff in both its Brisbane and Canberra offices.

We are interested in recruiting staff with experience of designing and implementing systems using ICL 2900 series hardware.

Assignments will involve support to clients in the implementation of advanced business systems using database, networking, communications techniques and distributed and personal computing. Leading-edge ICL technology experience is required and we are keen to talk to graduates with a background inventing one or more of the following:

- VME
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- LAFS
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- CAFS

We have opportunities at various levels of experience, including project leaders and managers. We are keen to see candidates with practical data base experience.

Interviews will take place in the UK during October.

If you are interested, please write to Helen Gracie, or phone her for an application form (quoting ref. PTY I) at Logica Limited, 64 Newman Street, London W1A 4SE. *Telephone 01-636 5454.*

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ANALYST PROGRAMMER c.£9½k

Project responsibility–right from the start

Sodastream is a highly successful Peterborough based manufacturer of a well known range of soft drinks and equipment.

In the midst of developing on-line systems to match our unparalleled growth, we're now looking for a young computing specialist to join our small and professional DP Unit.

Working closely with a variety of departments, your brief will be to initiate and implement systems for a range of company functions, such as marketing, manufacturing and export.

In this way, you'll be involved in full project responsibility – right at the start of your projects and of your career with Sodastream.

It's a challenging role, calling for an experienced computing professional with a systems background and comprehensive analysis skill. A knowledge of R.P.G. II/III is preferred as is experience of IBM GSD equipment.

The current hardware comprises an IBM system 34, IBM system 38 model 7 and four IBM 5285 distributed data systems which are located at Depots throughout the U.K.

The successful computing professional will receive an attractive salary which is, negotiable together with a competitive benefits package including full relocation where appropriate.

To find out more, contact Tim McMahon, Personnel Officer, Sodastream Limited, Morley Way, Woodston, Peterborough PE2 0BS. 0733 231121.

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Consultants, Systems Engineers, Software Engineers, Programmers

Salaries: £8000–£18000 with all usual benefits

Founded in the late sixties Systems Designers Limited is established as one of the leading system consultancies achieving a unique reputation with its policy of high quality products for real-time, mini and micro computer based systems.

To maintain a steady controlled rate of growth and meet the increasing demands of industry SDL are seeking experienced software professionals to contribute to and share in the success of a dynamic and forward looking company.

Current requirements are for Programmers, Software Engineers, System Engineers and Consultants with experience of real-time systems based on mini and microcomputers and a knowledge of high and low level languages. Experience of some of the following would be of particular interest:

- Internal system structure of UNIX applications
- Software and hardware for digital image processing
- Tactical communications (SATCOM, VHF, HF) applications
- Videotex, financial and banking or telecommunications
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- In-depth compiler design and construction.

If you have a degree or equivalent and at least two years relevant experience we would welcome a call on Freephone 3179 or if you prefer, write to Pamela Hayes-Jones.

Systems Designers Limited
Systems House, 105 Fleet Road, Fleet, Hampshire GU13 8NZ

Systems Designers

Berkshire to £14,000 pa
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Westcode Systems Ltd., part of the Hawker Siddeley Group, seeks additional Software Engineers up to Team Leader level. Their Wokingham-based development group is split into small teams, involved from start to finish on a range of high value, industrial and scientific, real-time projects including:

- water management systems,
- fuel pipeline monitoring,
- power systems control;
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In house development utilises DEC minis (with colour graphics) and own-design interfaces. Special-purpose software is written in high level as well as ASSEMBLER languages.

Applicants should have exposure to DEC hardware and/or microprocessors plus some of: RSX11-M, VMS, MACRO-11, FORTRAN, CORAL, RTL/2.

For further information please contact our advising consultant, Gordon Hunter, at:
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WESTCODE SYSTEMS LTD

Data Communications Specialist up to £15k

The world's leading supplier of information services and products, intends to maintain that position by developing advanced communications systems. In particular, effective electronic distribution of information throughout Europe is crucial to successful expansion in that market place.
IBM Network Controllers, Multiplexers and 327X devices, applying, SNA, IBM-BSC, X25 Technology and ASYNC TTY Protocols, will be used.

A DATA COMMUNICATIONS SPECIALIST

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FIVE YEARS MINIMUM IN DATA OR TELE-COMMUNICATIONS SUPPORT
DATA PROCESSING ENGINEERING AND NETWORKS

A programming background and a second language would be advantageous while self-motivation and good oral/written communications skills are also necessary.
The expansion of communications within the Corporation should ensure outstanding career development potential.
A GENEROUS SALARY OF UP TO £15K will be paid depending on experience. Excellent company benefits, include pension scheme with life assurance, private medical cover and relocation/season ticket assistance, where applicable, will be provided.

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West London **to £11,000**

Rank Strand, the market leaders in theatre and television lighting control technology, require a Software Engineer for their R & D department for developments within a UNIX environment. Programming experience in Assembler languages on mini or micro based computers as well as real time programming for machine or process control is essential. Candidates with a knowledge of digital electronics and computer interface design will be especially welcome.
The successful applicant will have at least an HNC/HND, be familiar with PDP-11, 68000 or 6809 processors and have used C, PASCAL or similar.
In addition to a realistic salary, our benefits package is that expected nowadays of a major international company. Please write to Mrs V. Hutchings, Personnel Manager, enclosing a curriculum vitae or telephone for an application form.

Rank Strand Ltd.
P.O. BOX 51, GREAT WEST ROAD, BRENTFORD, MIDDLESEX TW8 9HR. TEL: 01-568 9222. EXT. 605

Long established manufacturer with an international reputation, recently introduced a new 16-bit micro computer and urgently require additional staff now to take advantage of the initial success of the launch.

SOFTWARE SUPPORT

Applicants aged 24/30 with knowledge of accounts packages and previous micro experience, should find this newly created position attractive and rewarding. Duties will include background software support service to Dealers, attendance at exhibitions and some in-house staff training. Salary negotiable up to £10,000 according to previous experience on CP/M, plus car. **Reference 1304.**

SYSTEMS TRADE SALESMAN

Experienced salesman required to set up Dealer Distributor Network in London (part) and the South East for the new micro. Previous selling experience of computers to the Trade is essential. Salary £8,000 plus commission and car. Opportunity to earn up to £20,000 in 1984 with a guaranteed minimum remuneration until January. **Reference 1305.**

PERIPHERAL SALESMAN

As immediate sales of printers to the Trade and OEM outlets in London and the South East are not only possible but extremely likely, a basic salary of £8,000 plus commission and car will enable the successful candidate to earn a worthwhile income dependent upon effort in 1983/84 with a salary review in January. **Reference 1306.**

ARE YOU A BURROUGHS PROFESSIONAL?

Trace Manpower, a Burroughs Software House, often hear of exceptional opportunities – now is one of those times for Systems Analysts, Programmers, Project Managers etc, who are Burroughs Professionals – you will know if you are good enough to be considered!
As there are a number of positions throughout the country at various levels on the whole range of Burroughs mainframe and micros, salaries are negotiable. If you are considering career advancement and wish to continue using the most up to date Burroughs machines, this could be your opportunity. **Reference 1320.**

Applications for these appointments, which are open to both men and women, should be made by writing or telephoning for an application form quoting the appropriate reference.

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Satellite Comms.

LONDON **£10,500-£13,000**

Our client is the world's leading organisation for supplying electronic information to the media and financial community. They have one of the largest private communications network in the world which is about to be replaced. At this exciting development phase candidates with a minimum of two years' experience of programming in high level Real Time languages such as PCM/86 or PASCAL under the RMX/86 or VMS operating systems are required. GMF33/1

Data Communications

LONDON **UP TO £16,000**

Our client is currently engaged in developing Software for the communications industry. They are seeking qualified Consultants with experience of communications standards and protocols, LANs and Office Automation. The company offers good salaries, good expert lance and an excellent career structure. DLM33/2

Communications

BEDFORDSHIRE **£8,000-£10,500**

A systems engineer is required to work on the development of state-of-the-art communications systems products. This will include controller design, implementation, microcode, test software and systems software for high speed X25 and other network products. Applicants who hold a degree, with at least 2 years' experience of both hardware and software disciplines should apply. GMF33/3

Local Area Network Designer

HERTS **£12,000-£16,000**

A leading manufacturer of terminals, modems and networks requires a Senior Engineer to join a small team defining a new generation of multiplexor products. The successful candidate will be responsible for the investigation, specification and design of local area network interfaces for new generation equipment. The position requires at least four years' design experience in a high technology environment. Applicants should have experience of at least two of the following: data communications, LANs, 16 bit microprocessor board design, Assembler for real time applications, multiprocessor systems design. GMF33/4

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(5207)

Image Processing

NORTH LONDON **£9,000-£10,000**

A highly respected manufacturer of image processing systems requires additional Software Engineers, to work on digital processing systems. You should have had at least one year postgraduate industrial experience and have programmed in Assembler during this period. Creative flair, committed interest and the willingness to succeed will result in extensive opportunities for career advancement. GMF33/5

Process Control

LONDON **£11,000-£17,000**

The Industrial Group of a leading Software Company seek Consultants and Designers to development process control software for the food, drink and drug industries. Candidates, dependant on level of experience will be offered a number of positions such as supervising projects, developing software on large projects, assisting sales teams in a technical support role and producing specifications. DLM33/6

Modems Design

HERTS **£10,000-£15,000**

An engineer is required by a leading equipment manufacturer. Our client is ideally situated north of London, well served by rail and road. You will develop new microprocessor-based modems and local area network products and be expected to take a product from conception to production. A degree is highly desirable whilst at least two to three years' design experience with microprocessor-backed logic systems is essential. GMF33/8

Graphics/Cad

WEST COUNTRY **To £11,000**

A London-based Systems house is currently seeking scientific programmers to work on site in the West Country for a minimum of two years. Candidates should have experience of Fortran on VAX machines and an interest in graphics-type applications. In addition Programmers with Coral are required for engineering systems. DLM33/7

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Navigation Systems

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One of Britain's leading information systems contractors is seeking a consultant to work on Navigational Systems in marine and aircraft systems. Ideally the successful candidate will have a numerate degree plus five years' experience in the design and assessment of digital systems for inertial navigation, integrated navigation, radio and satellite. DLM33/9

Communications

CENTRAL LONDON **Up to £18,000**

One of the most respected Systems Houses in England is seeking highly experienced Senior Staff for the very specialised area of Military Communications. Ideally future Technical Consultants will have at least four years spent in communications or C3 environments. Systems cover landline to radio links, packet systems to fully automated switch systems, local area networks etc. DLM33/10

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SOUTH OF MANCHESTER **£9,000-£14,000**

Our [illegible] computer systems for commercial and military applications [illegible] and are constantly pioneering new [illegible] Under development are a wide variety of [illegible] Training, Communications and Energy Management Systems. [illegible] degree in an Engineering subject [illegible] experience in real time computer systems are required. GMF33/11

X25/LANs

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[illegible] GMF33/12

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Software Research

WEST COUNTRY **£NEG**

One of the world's most innovative producers of Microprocessor-based Signalling and Control Systems requires Software Professionals to develop Failed Safe Software. Successful candidates should have a degree plus a minimum of 2 years' Real Time Software, while Hardware appreciation would be helpful. DLM33/13

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- *have the ability to develop the sales & marketing activity of this progressive company with the guidance of the Sales Manager.*

If you are an energetic self starter who is looking to progress his career by joining a successful expanding company please call Barbara Allen at our Reading office.

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We require a Senior Programmer to take responsibility for a team of programmers and provide an interface between this group and the board of directors. This demanding and responsible role requires:

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- *A strong self motivating and enthusiastic team worker.*
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This exciting position offers the opportunity to participate in a company with high growth potential, personal development and career progression.
For further information please contact Keith Taylor at our Reading office.

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This is a real opportunity to enhance your career prospects and work in a challenging but rewarding environment.

For details of this post please contact Keith Taylor at our Reading office.

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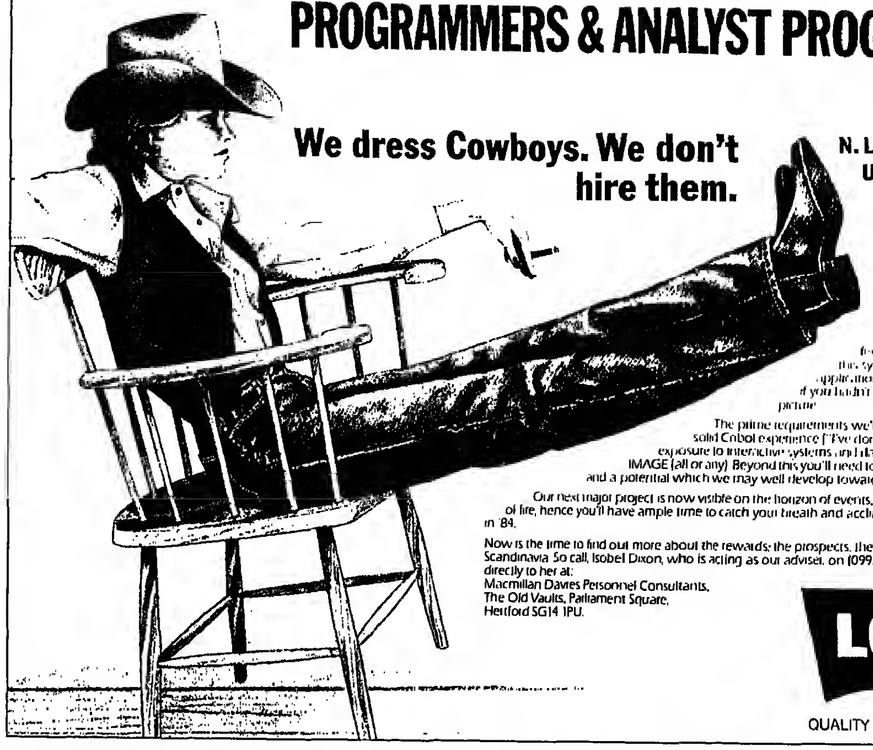

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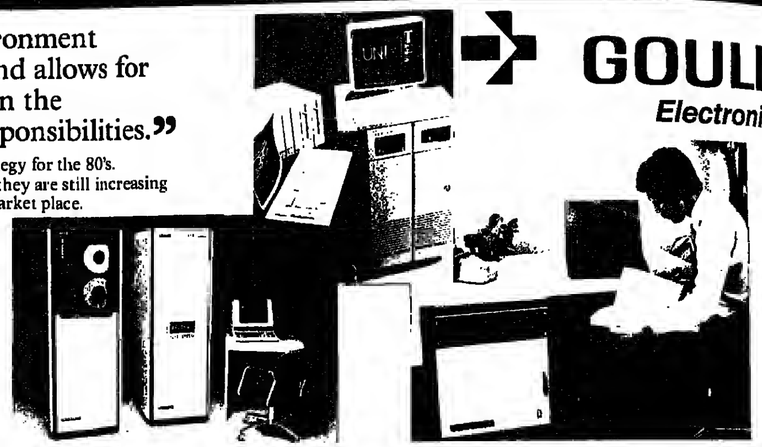

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BUSINESS ANALYSTS	PH 173
CORAL 66, all levels	SB 150
DATA GENERAL Business Basic	CW 180
DATA POINT Dateshare Datebus Prog./Analyst	SC 104
EPS Consultants	CW 182
GEC Bebbage and Viewdata Progs.	SC 166
GEC 4000 and/or CORAL all levels	SC 187
Hardware/Software Engineers	SC 109
Honeywell GCOS, IDS, TOS, COBOL	DB 110
Honeywell L8 GCOS, TPS Tech Support or Systems Progs. URGENT!	DB 162
HP 3000 COBOL Progs.	PH 172
HP 3000 Analyst	KC 181
IBM RPG II Analyst/Prog. with IBM 34 to 38 Migration Course experience	DB 176
IBM Adabas, Natural Progs.	DL 156
IBM 8100 DPCX or DPPX	SB 115
IBM PL1 with JSP	DB 116
IBM PL1, Adabas	DL 118
IBM IMS DB/DC COBOL & JSP Progs.	PH 158
IBM COBOL IMS DB/DC	DB/DL 120

URGENT
IBM COBOL CICS DL1 — SC/DL/PH 121

IBM NOMAD	SB 122
IBM System 38 RPG III Prog. with MAAPICS	SB 183
IBM System 38 RPG III	SC 127
IBM MANTIS Progs.	PH 169
ICL IDMS Analyst with Inventory Control	PH 163
ICL IDMS Database Analyst	CW 184
ICL IDMS Systems Prog./Designer	CW 130
ICL System 25 Designer and Progs.	CW 133
ICL VMEB IDMS, COBOL, all levels some with TPMS	PH/CW 134
ICL VMEB COBOL with SCL	PH 138
INTEL 8086 Programmers with PLM	DL 137
Michael Jackson structured programming technique with CDBDL	DB 139
POP RSX or RSTS/E Systems Prog.	CW 171
RAMIS Programmers	CW 178
SAS Consultant	CW 179
SYSTEMS ANALYSTS with User Liaison and pref. ICL DRS/Word Processing	PH 185
TANDEM Analyst/Progs.	PH 184
TI990 COBOL An./Progs.	DL 177
Technical Authors	DB 174
UNIVAC 1100 COBOL	SC 164
VAX VMS SYSTEL expertise	DB 145
VAX FORTRAN Progs.	DL 175
VAX VMS Systems Prog.	CW 170

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PERMANENT
ICL ME29 Progs.—Analyst/Progs.— Tech Support. East Mids. Ref: DB 678
INTEL 8085 ASSEMBLER Software Engineers S. Brum. Ref: NS 579.
Contact: NEIL SMITH, DAVE PARKER or KAREN LONGCROFT

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PROJECT LEADER

The Company
Glaxo is one of the worlds leading pharmaceutical Corporations based in the U.K. and trading throughout the world.

The Requirement
We are seeking to employ a project leader who will take responsibility for the automation of our North European operating companies. The successful candidate should have a sound dp background including experience of using online and database techniques in a commercial environment. We envisage that he will probably be in his late 20's qualified to degree level and currently either a senior analyst or project leader.

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The initial project is a highly challenging task which will involve considerable travel, a high degree of responsibility and the opportunity to work on one's own initiative. Following the successful conclusion of this project, we would expect to be able to offer a senior position within the Glaxo organisation.

The Equipment
Our preferred hardware supplier is Hewlett Packard and all our current systems are based on HP 3000 Kit. Experience gained in an HP environment would be regarded as an asset although it is not considered as essential.

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It's a role calling for extensive computing experience — at least 10 years in DP, with proven ability in programming, systems analysis and management — plus sound communications and leadership skills. A formal qualification to degree or equivalent level is also required.

SYSTEMS ANALYSTS

c£10k p.a.

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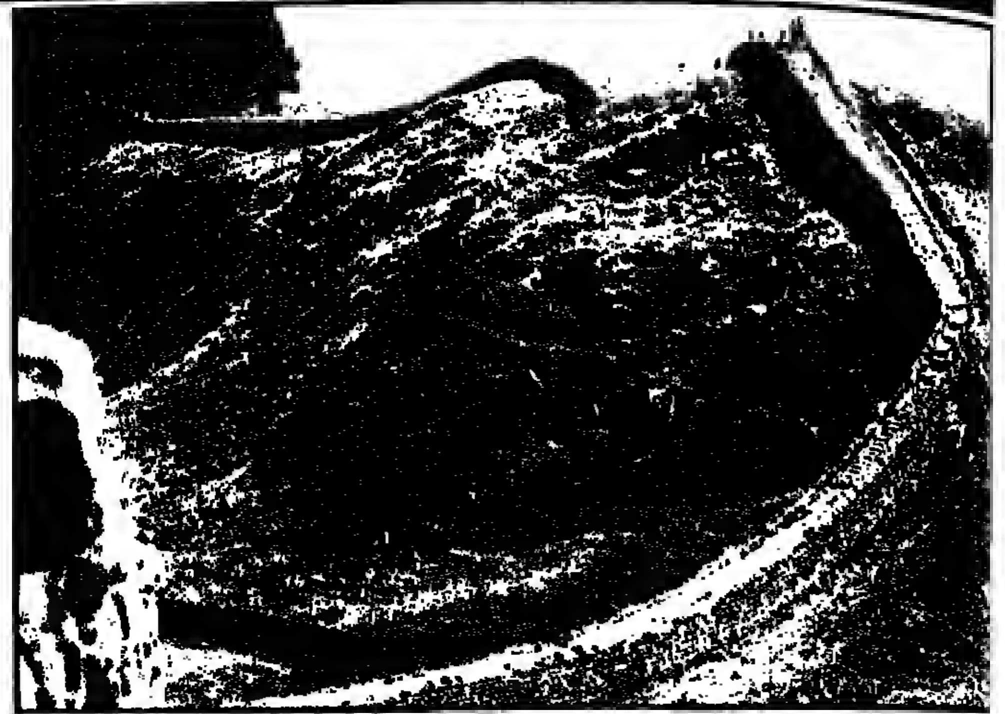
NMC
FIND A NEW FREEDOM

The lure of the north hypnotises southerners

Graduates from the south are keen to stay in their university towns in the cold north says Margaret Park



It's the north's attractions and not its dark satanic mills that appeal to southern graduates.

ONE misconception about the north of England – the idea that its inhabitants flock south to the (sometimes) sunnier vistas and picturesque surrounds – is nowhere clearer seen than in the behaviour of northern computer staff.

If they come from the north, it's the north they love and the temptation of slightly more opportunities down south has little pulling power.

And even dyed-in-the-wool southerners are hypnotised by northern charms – gone is the idea that no-one not wearing a strait-jacket would venture nearer to the North Pole than Potters Bar.

Hull, for example, a name not calculated to fire the imagination of those ignorant of its appeal, apparently lays claim to countless graduates of its university who, having spent three years studying in the city, will not be torn away.

Radius Computer Services says a large number of its technical recruits are Hull graduates who want to stay.

"We get a lot of interest locally in our adverts," said Radius company secretary, Pamela Watts "Once people have been here a couple of years they want to stay and we don't usually lose staff to companies outside Hull."

Radius, which is made up of two companies – Radius Ltd and Radius Computer Maintenance – has firm ideas about what makes a good programmer or analyst.

"We prefer to take trainees who haven't got a computer background," said Watts. "Those who've done computing courses," she added, "arrive with closed minds and haven't the flexibility of attitude that makes a good programmer."

Radius has recently been successful with two graduate recruits from disciplines as far removed from computer science as possible. Both are from Hull University but one studied philosophy and the other psychology.

Radius' recruitment is steady at present according to Watts, who says the company is in more need of staff for the field engineering and technical side of the business than software people.

The technical staff are those who train new customers to use their systems and give demonstrations to prospective buyers.

Of the company's 70 staff, two-thirds are technical in one way or another and most are committed to life beside the river Hull.

"We're a bit isolated from the rest of the north of England," said Watts, "but it's very pleasant, and most of our staff losses are to local competitors."

Two sizeable northern firms who are probably representative of many more say that their need for computer staff has been cut by a move to distributed data processing which puts more of the computing responsibility in the hands of the end user.

> **"Once people have been here a couple of years they want to stay and we don't usually lose staff to companies elsewhere"**

Northern Foods, for instance, the holding company for a large collection of food firms once carried out the data processing for all its subsidiaries at its Hull headquarters. Now its subsidiaries, which include North Country Breweries and Dale Farm Foods, have their own minis or mainframes according to their needs.

Northern Foods itself is currently looking for one replacement programmer and will provide support for its ex-users where necessary. The computer centre's operation are not being wound down completely because it still carries out centralised functions such as pensions schemes and payroll which couldn't efficiently be distributed amongst the smaller companies.

"We're trying to identify our future role," said a spokesman for Northern Foods. "We won't close the centre but some of our computing staff have moved to the operating companies where their skills are more urgently needed.

"We've had an effective role in the past," he went on, "but this change is a recognition of the age of the micro. Our users have said 'I can do it myself for less money'.

"It makes sense for our users to be responsible for their own requirements," said the spokesman, "and we support them if they need it. For around £3,000 to £4,000, a micro-based system in their own building will do the job they want."

A Huddersfield engineering firm is going through the same process of change.

"We're reducing staff because of a new computer strategy that is moving to distributed processing based on Honeywell DPS 6 minis," said a spokesman for the firm, "and this means more responsibility for the end user."

This same engineering firm bemoaned the problems it is having recruiting a senior systems analyst with the right background.

"We didn't get a very good response to our advertisements," the spokesman said. "None of them had the sort of experience we wanted."

The company is after an experienced systems analyst but one with a background in what is known as a made-to-order manufacturing environment. This means the company is concerned with manufacturing goods tailor-made to customer specification.

In the public sector, the picture for the north of England is as grim and uncertain as for the rest of the country. With massive cuts in the national health budget, recruitment for the regional health authority computer departments will suffer.

A spokesman for the Northern Regional Health Authority in Newcastle said: "No computer staff can be taken on now without the express permission of the regional team of officers which is the top authorising body in the area."

And at the headquarters of the local authority, Newcastle-upon-Tyne, the story is even worse.

"It's possible," said the data processing manager, "that we will have to cut back on staff including those in the computer department."

Professionals . . .

. . . FOR SUPPORT AND DEVELOPMENT

Manchester: £9,000-£11,500 + benefits

A leading catering management and consultancy company are in the early stages of developing a distributed computer system based on Burroughs hardware. These new positions are quite fundamental to the future development of the company's systems.

The SUPPORT MANAGER will become the centre of technical expertise in all aspects of our hardware, software and operations. We are looking for experience in CMS, MCP, DMS II and for the ability to communicate well – both verbally and in writing. This is a national post and a company car will be made available.

The BUSINESS ANALYST will assess the feasibility of systems and then design and develop them in a project context. Fourth generation development aids and user participation will be vital to the success of these systems. Burroughs experience is not necessary, but a systems background, preferably gained in a software house environment, is essential.

If you have the skills that we can use in this demanding business, then contact me, Martyn McReynolds, for an informal discussion as soon as possible – either on 061-832 9401 or on 061-427 1298 outside office hours.

Batchelors is in the middle of an extensive programme of introducing on-line systems across three sites, through a network of IBM 4300s operating under DOS/VSE. The following are currently required to fulfil key roles in the current high development environment at our Head Office in Sheffield.

DATA BASE ADMINISTRATOR

c. £13,000 according to experience

In this central management role you will be expected to design DL/1 data bases which give good performance whilst still satisfying the business requirements. Maintenance and support of these data bases will develop with increasing user contact into an Information Centre approach, thus calling for a greater range of skills beyond purely technical ones.

To meet the challenge of this position you will need to have had seven years' experience in an IBM DOS/VSE environment, a substantial part of which must include DL/1. A good data base design background is essential and knowledge of IBM's data dictionary would be an advantage.

This is a Unilever Management appointment, offering excellent benefits and conditions of service, including relocation expenses where appropriate.

DESIGNER/PROGRAMMER

c. £7,800 according to experience

This is an excellent opportunity for an experienced designer/programmer with a sound knowledge of CICS/DL1 and COBOL to develop skills within our busy development team. You will assist in the specification and design of systems/data bases, fulfilling an essential role between the business and technical functions in the Business Systems Department.

Three to four years' programming/design experience is required, and experience of working in an application team environment and knowledge of UFO would be an advantage. We offer excellent benefits and conditions of service, including flexible working hours and 25 days' annual holiday.

Please write giving brief details of your experience to date to:

Lynn Brothers
Staff Officer,
Batchelors Foods Limited,
Wadsley Bridge,
Sheffield S6 1NG.

Batchelors for good food

Systems Programmer

Formica lead the field in the development and manufacture of decorative laminates and to help maintain this position we have installed an IBM 4341 running under MVS and CICS/DL1.

We are looking for an additional systems programmer who will be responsible for the maintenance of the operating system and teleprocessing/database software. Applicants should therefore be fully conversant with either MVS or OS and CICS/DL1 in an operational environment.

A competitive salary is offered together with a benefits package usually associated with a large Company, and assistance with relocation will be given in approved circumstances.

Write with full career details to:
Derek Cuthbert, Development, Training and Recruitment Executive,
Formica Limited, Coast Road,
North Shields, Tyne and Wear,
NE29 8RE.

FORMICA the creative laminate

CDVEC CITY OF DUBLIN VOCATIONAL EDUCATION COMMITTEE

Dublin Institute of Technology

College of Technology, Kevin Street, Dublin 8.

Lecturer in Computer Science

Applications are invited from suitably qualified persons for the above wholetime teaching post at Lecturer Scale I level.

MINIMUM QUALIFICATIONS:

(a) A first or second class honours degree of a recognised university in a relevant discipline or an equivalent qualification;

(b) At least three years approved postgraduate experience in third-level teaching and/or in the development and implementation of Computer Systems and/or Research.

Qualifications, salary and conditions of service as per Memo V.7 of the Department of Education.

SALARY:

IR£11,227 to IR£15,806 (Incremental credit up to a maximum of five years may be permitted in certain circumstances).

Applications on the standard form and further information available on request.

Completed application forms must reach the Secretary/Registrar not later than 12 noon on Tuesday, 1st November 1983. (5573)

Chief Executive Officer: W I Arundel, B Comm., H Dip Ed

PF PRESTON FARMERS

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PRESTON FARMERS LIMITED

wish to appoint a

MANAGEMENT SERVICES MANAGER

The successful candidate will reported directly to the Chief Accountant and must have a proven record in the systems and project management in a medium-sized main frame computer environment. It would also be useful to have a knowledge of communications and net-working in computers, and therefore it is unlikely that applicants will be under 30 years of age.

The job entails the responsibility for the whole of the Society's Data Processing and Computer Departments including the maintenance and development of existing and new systems.

This is a new appointment and an ideal opportunity to join a progressive organisation at a time of major developments in it's computer facilities.

Written applications, in confidence, to:

Malcolm Dalton
Personnel and Training Manager
Preston Farmers Limited
Kinross, New Hall Lane
PRESTON, Lancs. PR1 5JX

(5869)

COMPUTER PERSONNEL
Saudi Arabia

The following grades are required to work through our associate company in Saudi Arabia. Candidates should be well educated and our minimum age requirement is 25 years.

Systems Analysts
£25,000 Tax Free

Must have extensive PL/1 and Fortran linked with IBM environment. TSO MVS VM SAS and SPF knowledge essential. Good communication skills and documentation writing as well as some training experience advantageous.

Supervisors – TP Services/ TP Equipment Analysts
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Experience with large IBM Systems and MVS/JES 2, JES 3/TSO, VTAM, graphics and output on to Calcomp and Benson plotters as well as 3800 series printers.

We offer bachelor status contracts annually renewable, free accommodation and transport, paid leave to UK and all medical insurance.

Please telephone and request an application form and further details.

SURVEY & DEVELOPMENT SERVICES
1 Atholl Place, Edinburgh. Tel: 031-228 1446

(6453)

The POLYTECHNIC WOLVERHAMPTON

LECTURING POST

Lecturer II/Senior Lecuturer in Computing

Preference will be given to well-qualified candidates with research or development experience in computer graphics, artificial intelligence and knowledge based systems

Salary: £7,215-£13,443 p.a.

Details and application forms returned by October 10, 1983, from Establishment Clerk, The Polytechnic, Wolverhampton WV1 1SB, or telephone Wolverhampton (0902) 710654 (ansaphone). (5748)

SHEFFIELD CITY POLYTECHNIC
DEPARTMENT OF COMPUTER SERVICES

PROJECT MANAGER – TEACHING APPLICATIONS

Vacancy No 55/83

£10,539-£11,703

Are you a "Lateral Thinker?"

We are offering an opportunity to an energetic person able to lead a team of Programmer/Analysts in finding software solutions to problems which require new initiatives and radical new approaches to support users. The problems arise in the application of computing in teaching and research across a wide spectrum of academic disciplines.

Mainframe experience is essential since the Polytechnic runs an IBM 4341 supporting over 100 terminals concurrently, but experience of microcomputers is also important.

Applicants should be able to demonstrate both sound programming experience and ability to motivate and supervise people.

Application forms and further details are available from the Personnel Department, Sheffield City Polytechnic, Halfords House, Fitzalan Square, Sheffield S1 2BB. Tel: 0742 20911 ext 361. Completed forms to be returned by 19th October.

Sheffield City Polytechnic is an equal opportunities employer.

(5816)

GREATER LONDON

Recruitment Feature

13th October

This feature, with full editorial support, will highlight job opportunities in the Greater London area.

For further information, please contact

01-661 8080 (Direct clients)

01-661 8787 (Consultancies)

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UNIVERSITY OF SALFORD
Department of Civil Engineering

SCIENTIFIC OFFICER

Applications are invited from suitably qualified persons with expertise in micro-computer hardware and software.

The successful applicant will be required to:

(a) Assist in the linking of laboratory experiments to computers including development of the necessary hardware and software;

(b) Collaborate with academic staff in the development of software for both undergraduate teaching and research applications.

Salary within the range £7,190-£11,615 p.a., depending on age, experience and qualifications, USS benefits. The post is available immediately.

Application form and further particulars from the Registrar, University of Salford, Salford M5 4WT (tel: 061-736 5843 ext. 216) to whom completed applications should be returned not later than 17 October 1983, quoting reference C/234/CW.

(5626)

APPLICATIONS PROGRAMMER

MALE OR FEMALE
£ Salary negotiable

Sedgefield Area **Fringe benefits**

Challenging opportunity to take responsibility for day-to-day running and program development on commercial real-time micromainframe project. The successful applicant is likely to have at least two years' applications software experience on multi-user hard disc minicomputer systems.

Alpha Micro computer: 90 megabytes hard disc, 1 megabyte main memory, 20 VDU terminals, with networking to satellite offices. Alpha Basic.

Alpha experience not essential, since training will be given.

Please contact John [illegible]
[illegible] High Street, Northallerton
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Telephone: [illegible]

(5686)

Lysis Computers Limited

GREAT GRIMSBY BOROUGH COUNCIL

MANAGER

Information Technology Centre
£9,945-£11,052

Applications from registered disabled persons will be welcome.

An Information Technology Centre is to be established in Great Grimsby with the aim of helping the unemployed young people gain work experience and training in the area of new technology. Thirty young people and five adult staff will be involved in such fields as basic electronics; basic computer skills, word processing and the electronic office. We are seeking a person with proven managerial experience, a capability in both hardware and software, a knowledge of production and marketing techniques to help set up and then to manage the efficient operation of the Centre.

An outline job description and application form are available from the Personnel Officer, Great Grimsby Borough Council, Municipal Offices, Town Hall Square, Great Grimsby DN31 1HU, telephone number 0472 59161. Completed forms must be returned by 14th October, 1983.

(5739)

LWCR
London West Computer Recruitment

CAE Development/Support
W Midlands — £7-13K
CAE systems division of manufacturing corporation require staff for new development and package support for engineering design applications. Degree standard applicants should have relevant experience in Fortran/Basic on IBM mainframes under MVS/TSO, or on DEC PDP or similar minis. Senior positions require good experience of structural analysis (finite element)/graphics. Ref. 601

DEC VAX Permanent/Contract
West, Wales — £ negotiable
Manufacturing and distribution companies require DEC VAX programmers and analyst programmers at varying seniority levels for commercial applications development in Cobol under VMS. More senior positions call for minimum 6 years d.p. experience including two on DEC VAX. Excellent permanent and contract opportunities. Ref. 509

DEC VAX Systems Programmers
Wilts, Avon — £10-12 K + negot.
Subsidiaries of large companies seek two systems programmers for systems software support, performance monitoring, systems tuning and some development work on VAX 11/780's under VMS. One position requires DECNET knowledge; both require good Fortran. Experience in Basic/Assembler/Pascal desirable. Excellent conditions. Relocation assistance. Ref. 870

HP Analyst. Programmers
S Wales, Hants — £9-11K
Manufacturing companies with multi location installations in UK and Europe require an analyst based in Wales and programmers based in Hants with a minimum of 1 year's Hewlett-Packard experience on commercial applications. Frequent travel involved – outgoing personalities required. Excellent career opportunities. Ref. 883

Write or telephone:
London West Computer Recruitment
Evergreen, Dauntsey, Chippenham, Wiltshire SN15 4JA
Telephone: (0249) 891114

IBM Programmers
Berks — £9-13K
A major group with a large IBM mainframe network seeks several programmers with IBM Cobol experience to work on on-line commercial database systems using CICS and DL1. First class opportunities for career progression. Excellent salaries and conditions. Re-location assistance. Ref. 827

ICL Analysts, Programmers
S Wales — to £12K
Financial services organisation requires analysts and programmers to develop systems on large ICL mainframe. Experience of financial applications essential for analysts. All applicants should have a Cobol background and have degree or equivalent qualifications. Re-location assistance. Ref. 863

RPG II/III A/Programmers
Glos, Wilts, Hants — £ negotiable
Manufacturing and commercial services organisations with IBM System 38 installations have vacancies for analyst programmers and programmers with RPG experience. Good salaries and re-location assistance in all cases. Ref. 787

IBM Systems Programmers
N Bucks — £9-16K+
Computer services organisation and manufacturing companies require several systems programmers at junior and senior level with experience of MVS/TSO and/or DOS VSE plus CICS. Knowledge of at least one major database software system is desirable. Good benefits. Re-location assistance. Ref. 884

Senior Real Time Specialists
Hants — £13.5-15K
Major company developing advanced real time military communications systems need senior real time specialists/project leaders. GEC 4000 and Carol experience is particularly needed. Knowledge of DEC VAX, Intel plus low and high level languages is relevant. Applicants aged c.35 years must have good degree qualifications. Excellent relocation package. Ref. 746

Microprocessor A/Programmers
S Glos — £7-10K
Small subsidiary of international group building advanced integrated microprocessor systems requires two analyst programmers to specify and program new sub-systems on Intel micros. A minimum one year's experience of 8085 or Z80 Assembler is essential and PLM or Basic desirable. Good prospects in expanding company. Re-location assistance. Ref. 877

Real Time Engineers
West, South, Wales — £10-£15K+
Major companies developing real time applications in telecommunications, process control, telemetry, industrial automation and military systems require experienced team members and project leaders. Computer Science/Engineering degrees essential, plus assembler and/or high level real time language experience. Excellent benefits. Re-location assistance. Ref. 614

Electronic Engineers
Wilts — £7-13K
Expanding company manufacturing advanced communications and business systems equipment requires several engineers at junior and managerial levels. Openings exist in testing, QA, reliability assessment, VLSI methodology and electronic design. Applicants aged 25-40 years must have appropriate technical qualifications. Re-location assistance. Ref. 598

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Universal Computers Limited – sole UK distributor of ULTIMATE computers (all of which use the famous PICK Operating System) is growing . . . fast. So it needs more sales and support staff to meet the increased demand for existing and new products, including a powerful new super micro (also running PICK) competing with many mini systems.

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Central London Salary £11,000-£14,0..
Basic + Benefits

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This opportunity offers the chance to work with the originator of the software whilst he is in the UK tailoring, enhancing and developing it further for the European and UK market, and at the same time training you for a management role.

This system is based on WANG VS100 hardware and developed in COBOL; WANG experience would be ideal, although any good mini COBOL experience, ideally financially based, would be considered.

For further information, please contact Jenny Dalrymple-Hay or Peter Henrick on 01-493 2947, from 8 a.m. to ... p.m. Monday to Friday or weekends Jenny Dalrymple-Hay on Beaconsfield (04946) 4579 or Peter Henrick on 01-390 1640 quoting Ref: 5018.

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HI TECHNOLOGY APPOINTMENTS

Our clients require professionally qualified individuals, educated to degree standard as a minimum, to work on high tech systems. The applications include, Defence (Army, Navy and RAF), communications, electronics, real time software design and radar. You will need one or more of the following, INTEL, VAX, MDS, M700, GEC ATLAS hardware using CORAL, ADA, PDL, FORTRAN, SLAM, PASCAL, PAL 8 languages. Other software includes, MAG, FACE, MASCOT, AMETS and SLATE. Based Home Counties £15,000.

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ANAL/PROG. – Mini/Micro networks, PASCAL essential, producing banking packages, American Bank, £15,000+benefits.
PROGS – IBM SYST 38, RPG3, FX, M/MARKETS, BANKING, £10,000+benefits.
CONSULTANT – Develop/Market banking systems, £18,000+, plus car.
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CONTRACTS

ANAL/PROG – IBM 303X, MVS, COBOL, BANKING	£450+p.w.
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ANAL/PROG U1100, EXEC 8, COBOL CONVERSION	£400+p.w.
ANAL/PROG D.G. AOS, RTOS, COBOL, TRANSPORT	£350 p.w.
ANAL/PROG TANDEM, GUARDIAN, COBOL, BANKING	£450 p.w.
ANAL/PROG IBM SYST 38, RPG3, BANKING	£450+p.w.
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PROGRAMMERS
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For further information write or telephone Bernard Taylor on 01-930 4041 during office hours or Hayling Island (07016) 66768 evenings.

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Recruitment & Training
19 Charing Cross Road
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NEW MIDDLESEX-BASED COMPUTER CENTRE

IBM 3083 – MVS/JES2, TSO/SPF, CICS and IDMS

Our client is a major international organisation operating in the Financial Information Services sector of the market on a worldwide basis, and is currently setting up a new centralised European computer centre. Decisions have been taken to develop a wide range of financial services for UK and European customers which involves the design and implementation of large DATABASE systems using IDMS and CICS as a TP monitor.

Immediate requirements are to recruit a number of key D.P. Professionals which will provide them with the scope and opportunity to make a significant contribution to the development of new major batch and online/realtime projects. Excellent career progression will be afforded to those D.P. Professionals who can demonstrate their skills and contribute towards these ambitious development plans.

PROJECT LEADERS — c.£15,000+
Applicants must be able to demonstrate a sound technical track record of design and implementation of large-scale batch and online database applications, with experience of IDMS or other database experience. A working knowledge of command level CICS is essential for one of the positions preferably gained in an OS/MVS/JES database environment. A knowledge of BAL would be an advantage, but not essential. Project Leaders are responsible for functioning systems and associated documentation.

DATABASE ANALYST — c.£14,000+
This position will suit someone with a sound knowledge of IDMS (IBM or ICL), together with a working knowledge of COBOL. The successful applicant, who will be responsible to the Database Administrator, must be able to communicate effectively at Project Manager level, and make database design decisions. Additional functions would eventually include responsibilities for staff at junior level

ANALYST/PROGRAMMERS — to £13,500+
Applicants must have sound experience of IBM COBOL, together with a working knowledge of JCL preferably gained in a large-scale online database environment using OS/MVS. Exposure to analysis at design and specification level is essential. A knowledge of BAL would be an advantage, but not essential. Training in CICS will be given where required.

PROGRAMMERS — to £12,500+
A minimum of 2-3 years IBM COBOL and/or BAL is needed, together with a working knowledge of JCL preferably gained in an OS/MVS environment. Training in CICS will be given where required.

OPERATIONS MANAGER — to £20,000+car
This position will suit someone with extensive DP expertise, together with a proven technical and managerial track record. The successful applicant will take a leading role in the pre-installation and running of this new Computer Centre.

If you are attracted to the challenge of these ambitious development plans, which provide the scope and opportunity for excellent career progression and generous benefits package, call IAN C. BUICK, MBCS, Managing Director.

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Victoria · London SW1P 1JU

Tel: 01-834 0061 (24-hours)
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01-942 1178

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Cambridge **to £12,500**

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The company is committed to a continual programme of research and development in the area of CAD/CAM, particularly 3D Modelling Techniques, Numerically Controlled Machine Tools, sophisticated Database techniques and the broadening of applications from Mechanical and Electrical Engineering into other areas of industry.

They have, in-house, large Prime and Vax mini-computers dedicated to this development work and these are networked to a number of other machines within the organisation. A wide variety of Graphics Display Equipment is installed for the development of Graphics Software.

Applicants will be graduates and have a good working knowledge of Fortran preferably gained on a VAX machine. Experience of Unix and 'C' would be an added advantage.

This is an unique opportunity to join a company whose success to date outstrips any of its nearest rivals.

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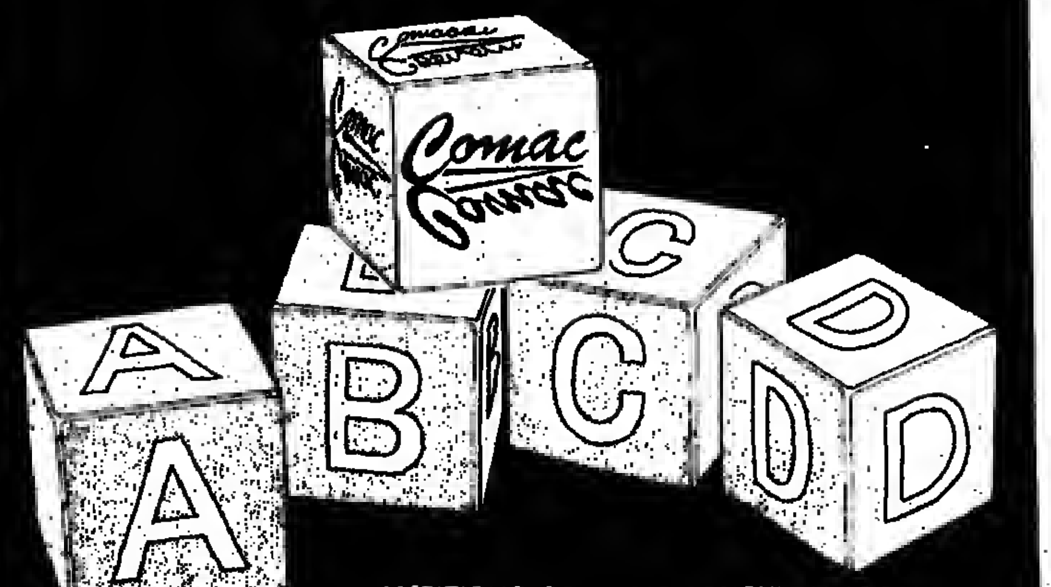

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PUBLIC SECTOR

An East Anglian Challenge
COBOL Programmer

Salary Scale £7,191-£7,896

Applications are invited for the above post from candidates who possess a minimum of two years' commercial COBOL experience on an IBM 4300, working under DOS/VSE. A knowledge of CICS would be an advantage. This challenging post is located within a newly created section and offers ample scope for further career development.

West Norfolk offers you the 'Good Life' – 600 square miles of outstanding natural beauty containing a resident population of 120,000. Centred on King's Lynn, an expanding town, thriving port and agricultural centre, the area offers excellent facilities for a variety of sporting and cultural pursuits. Housing is reasonably priced and there are excellent schools and modern shopping precincts.

Temporary housing accommodation is likely to be available together with relocation expenses.

Application forms and job descriptions are available from the Personnel Section, Chief Executive Officer's Department, King's Court, Chapel Street, King's Lynn, Norfolk PE30 1EX. Telephone King's Lynn 61241, Ext 265.

Closing Date: 21 October, 1983

BOROUGH COUNCIL OF KING'S LYNN & WEST NORFOLK (5895)

WESTMINSTER HOSPITAL MEDICAL COMPUTER CENTRE

SENIOR SCIENTIST-PROGRAMMER

We have an IBM Series/1 and several DEC PDP-11 computers used for on-line acquisition of clinical data, laboratory automation, medical research and statistical analysis. The main programming language used is Fortran.

Applicants (male or female) should have a good honours degree in Science, Mathematics or Engineering and two years of relevant postgraduate experience.

Salary scale is in the range of Senior Scientific Officer, £10,007-£12,546 inclusive of London weighting, depending on qualifications and experience.

Application forms from: Personnel Department, Westminster Hospital, Dean Ryle Street, Horseferry Road, London SW1P 2AP. Tel: 01-828 9811 ext 2101. If you wish to send a letter as well, supporting your application, please do so.

Further details about the post from Dr T. D. Preston, on 01-828 9811 ext 2626. (5810)

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university college of swansea

Assistant Communications Engineer

The college has recently established a Communications Unit in the Computer Centre, responsible for the maintenance and development of telecommunications facilities, particularly in relation to computing word processing and administration.

The College which already has an extensive data transmission network and is shortly installing a Plessey IDX Digital Telephone Exchange, now wishes to appoint an Assistant Communications Engineer who will join the Communications Unit and take over responsibility for the technical aspects of speech communications and who will also contribute to the Unit's programme of development.

Applicants, who should be graduates or have appropriate technical qualifications, should have experience of either maintenance, development or design of telecommunications systems or computer hardware or software, particularly in relation to communications.

Starting salary will be in the range £6,310-£8,875, according to level of experience.

Further particulars and application forms may be obtained from the Personnel Office, University College of Swansea, Singleton Park, Swansea SA2 8PP to which office they should be returned by Friday, 21st October, 1983. (5891)

QUEEN MARY COLLEGE
University of London
Computer Science and Statistics Department

SELF-MOTIVATED PROGRAMMER

required to provide programming support and assist running and development of the teaching service, systems programming, program development and tutoring first-year students. The Department offers an informal and stimulating working environment with active research in IKBS, IT, Distributed Systems, Interactive Systems and Graphics. Applicants should be graduates, preferably with UNIX experience: the Department runs UNIX on PDP 11s and VAX 11/750.

Initial salary in range £8,310-£9,975 p.a. plus £1,186 London Allowance.

Please apply by letter enclosing c.v. and names of two referees to The Secretary, Queen Mary College, Mile End Road, London E1 4NS. (5917)

HOUNSLOW BOROUGH COLLEGE

LECTURER I

in computing to teach Computer Programming (BASIC and/or COBOL), Data Processing and business systems to BEC National and general levels.

Salary is £6,649-£8,935 plus London weighting.

Further particulars and application forms from:
The Principal
Hounslow Borough College
London Road
Isleworth TW7 4HS
on receipt of large S.A.E. closing date 14 days from advertisement. (5891)

BOX NUMBERS

Box number replies should be addressed to:

Box Number ....

c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS

PUBLIC SECTOR APPOINTMENTS

COMPUTER DEVELOPMENT STAFF

Barnet is an Outer London Borough situated on the London/Hertfordshire borders with easy access by road, rail and tube.

To help satisfy the increased demand for computer services currently based upon a dual ICL 2960 VME configuration with an extensive terminal and micro network, we require additional staff who will play major roles in developing new systems for a wide range of local services.

SOFTWARE AND COMMUNICATIONS OFFICER (249)

to £11,500, with responsibility for the communications network design, implementation and performance monitoring.

Applicants should have a detailed knowledge of network design, TPA and TPMS, together with experience of micro/mainframe interfacing.

PROGRAMMER/ANALYST (432)

to £11,500, with technical skills to develop systems from initial investigation to successful implementation using VME and micro facilities.

PROGRAMMER/ANALYSTS (257/433)

to £9,300. Applicants should have at least one year's solid VME COBOL experience and the ability to develop their analysis skills with the aid of formal training.

Separation allowance and removal expenses may be paid, and staff housing accommodation provided for a limited period in approved cases; interest free loans are available for annual season tickets; generous holiday entitlement.

Application forms from Room 48, Borough Treasurer's Department, London Borough of Barnet, Town Hall, Hendon, London NW4 4BG, telephone number 01-202 8282, Ext 120 quote the appropriate reference number. Closing date 21st October 1983.

We welcome applications from registered disabled people

London Borough Barnet (6863)

OXFORD UNIVERSITY COMPUTING SERVICE

SYSTEMS PROGRAMMER

The Service runs an ICL 2988 and three VAX 11/780 computers, and has an extensive communications network. Developments in the near future include the acquisition of an ICL CAFS system.

The Service requires a Systems Programmer, to work initially on the maintenance and development of the VME operating system. Previous experience of VME, though desirable, is not essential.

The appointment will be made within the Universities' Research Staff Scales 1B (£6,310-£9,875) or 1A (£7,190-£11,615) with initial placement according to age and experience. Promotion is possible to Scale II (up to £14,125 pa).

Further details and application forms may be obtained from the Director's Secretary, Oxford University Computing Service, 13 Banbury Road, Oxford OX2 6NN. Telephone (0865) 56721.

The closing date for applications is 24th October, 1983. (5911)

CITY OF WESTMINSTER
City Engineer's Department

Programmer/Analyst

£10,194-£10,794 p.a. inclusive

To assist with the management and operation of three DEC PDP11 systems used by the City Engineer's Department for a wide variety of technical and administrative functions. You will be expected to take responsibility for new projects and to assist and advise the whole range of staff on the use of hardware, software and communications facilities.

The department also uses a bureau with a VAX and graphics facilities and much future development work is expected in this area.

Applicants should have experience in at least two of these topics:

RT11	TSX – Plus	VMS
BASIC	FORTRAN	PASCAL
DEC Hardware		

and should possess a good honours degree (preferably in mathematics or computing) and some computing experience.

29 days annual holiday plus 1 day off every 4 weeks. Modern offices near Victoria Station with restaurant facilities. Interest free loan for annual season ticket.

To obtain application form please send postcard, telephone or call at the Personnel Management Division (Ref: ENG 30), PO Box 240, WESTMINSTER CITY COUNCIL, City Hall, Victoria Street SW1E 6QP, telephone 01-834 5959 (24 hour Ansafone service). Closing date: 13th October, 1983. (6696)

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GWENT COLLEGE OF HIGHER EDUCATION
Faculty of Information Science and Systems Technology

HEAD OF SCHOOL OF COMPUTING

Applications are invited from highly qualified, highly experienced people with the ability to lead a team currently teaching and developing high-level computing courses.

Salary: P.L. Grade £12,519-£15,774.

SENIOR LECTURER IN COMPUTING

Applicants should be graduates with a broad experience of computer science and able to offer a high-level of expertise in particular areas. Teaching experience at NHC/HND or degree level is desirable.

Salary: £7,215-£13,443

Further details and application forms can be obtained from, and should be returned within 10 days of the date of this advertisement to:

The College Secretary, Gwent College of Higher Education, College Crescent, Caerleon, Gwent NP6 1XJ. Tel: (0633) 421292. (5800)

UNIVERSITY OF NOTTINGHAM
Human-Computer Interaction Group

Applications are invited for the post of

RESEARCH ASSISTANT

on an SSRC-supported project: Software Tools for Laboratory Computing in Psychology. The successful candidate will join a group that is using the language Modula-2 to create a portable development and execution environment for real-time, multi-process laboratory control programs. Applicants should have a good first degree in Computer Science or a related discipline together with appropriate postgraduate experience. Relevant interests are wide-ranging and include: System Implementation Languages, Real-Time device programming, computer graphics, screen editors, software-development tools and user interfaces.

The post is available for a period of 15 months from 1st October, 1983 or as soon as possible thereafter. Appointment will be made on a scale rising to £7,190 per annum.

Enquiries should be directed to: Dr Roger Henry, Human-Computer Interaction Group, Department of Psychology, University of Nottingham, Nottingham NG7 2RD. Applications are to be made as soon as possible by letter and should include a curriculum vitae and names and addresses of two academic referees. (5868)

THE POLYTECHNIC OF WALES
POLITECHNIG CYMRU
COMPUTER CENTRE

SENIOR SYSTEMS PROGRAMMER
AP5/SO1

Salary: £8,154-£9,660 p.a. inc.

Following an internal promotion a Senior Systems Programmer is required for a DECsystem-20 mainframe supporting up to 60 interactive users for general purpose computing and a VAX 11/780 for Computer Aided Engineering.

Applicants for the post should be educated to degree level and have a working knowledge of both low-level and high-level programming languages. An interest in Computer Aided Engineering would be an advantage.

The Polytechnic is housed in modern buildings on a single site within easy travelling distance of Cardiff and the South Wales coastline.

Further particulars and application forms may be obtained from
The Personnel Officer
The Polytechnic of Wales
Pontypridd, Mid Glamorgan
CF37 1DL
Tel: (0443) 405133 ext 2021

CLOSING DATE: 21st October, 1983

(5851)

The Polytechnic of Wales

QUEEN MARY COLLEGE
University of London
COMPUTER SCIENCE AND STATISTICS DEPARTMENT

RESEARCH ASSISTANT

required for 1-year for project involving design of parallel algorithms for computer vision, in particular, the extraction and use of optical flow measures for depth mapping of the environment. Active collaboration with research groups at GEC Hirst Research Centre is an integral part of the work. Candidates should have postgraduate research experience in a relevant field, a keen interest in human visual competence and intelligent systems and experience of programming in various languages and environments.

Salary in range £8,376-£9,716 p.a. including London Allowance.

Further details available from Dr Hilary Buxton while applications enclosing c.v. and names of 2 referees should be sent to The Secretary, Queen Mary College, Mile End Road, London E1 4NS. (5896)

QUEEN MARY COLLEGE
University of London
COMPUTER CENTRE

UNIX SUPPORT PROGRAMMER

required for Systems Group to assist in support of the teaching services offered to the College. These are currently provided on a VAX 11/750 running UNIX 4.2 BSD. The Programmer will be expected to give occasional assistance with other UNIX systems throughout the College.

The successful candidate will be a graduate, or equivalent, able to communicate ideas clearly and with experience of UNIX and C.

USER SUPPORT PROGRAMMER

Applications are invited from Graduates with relevant experience in university or scientific computing for a post in the User Support and Superstructure Group which is responsible for applications software and user guidance. There will be particular responsibility for providing support for users especially those using services external to the College. Experience of VME 2900 an advantage but consideration will also be given to those with knowledge of Amdahl or Cray systems.

Salaries in range £7,496-£11,061 p.a. including London Allowance. Please apply in writing, enclosing c.v. and names of two referees, to The Secretary, Queen Mary College, Mile End Road, London E1 4NS, by 26 October 1983. (5818)

THE UNIVERSITY OF SUSSEX
School of Engineering and Applied Sciences

RESEARCH FELLOW MAP DISPLAYS

Applications are invited for a Research Fellow to work in the field of Computer Map Displays and the associated databases. Good honours degree required; background and experience in computer graphics preferred but not essential. Salary on scale for Research and Analogous Faculty IA (£7,190 to £11,615 per annum). The appointment is for the period up to September 30th, 1984.

Applications should be sent to Professor R. L. Grimsdale, The School of Engineering and Applied Sciences, The University of Sussex, Falmer, Brighton, Sussex, as soon as possible. (5837)

SOMERSET COUNTY COUNCIL
EDUCATION DEPARTMENT
INFORMATION TECHNOLOGY CENTRE
SOMERSET COLLEGE OF ARTS AND TECHNOLOGY
COLLINSON CENTRE, TAUNTON

MANAGER

Required as soon as possible for a new Information Technology Centre.

The Centre, which is sponsored by the Somerset College of Arts and Technology under the new Youth Training Scheme, is largely funded by the Manpower Services Commission with assistance from the Department of Industry. The aim of the ITEC is to provide skills training for 30 trainees in the general areas of computing, electronics and microprocessors, which are relevant to technical and business applications.

The salary for this full-time (37 hours per week) post will be £10,539 per annum.

The person appointed will be involved in the initial development of the Centre and responsible for its day-to-day running. He/she will also participate in the training and work of the trainees as an active instructor.

Applicants should have relevant and recent industrial experience in microprocessor/microcomputer applications with qualifications appropriate to the post and to the skills training activities.

PRIORITY WILL BE GIVEN TO UNEMPLOYED APPLICANTS
Previous applicants will be reconsidered automatically.

Application form and further details available from the Chief Education Officer, Staffing N.T. Section, County Hall, Taunton, Somerset (stamped addressed envelope please).
Closing date: 21st October, 1982. (5865)

POLYTECHNIC OF THE SOUTH BANK
Borough Road, London SE1 0AA

MANAGER INFORMATION TECHNOLOGY CENTRE

Salary up to £14,000 p.a.
(Readvertisement)

The POLYTECHNIC OF THE SOUTH BANK in association with the BOROUGH OF WANDSWORTH is proposing to sponsor, subject to the formal approval of the MSC (under the YTS Scheme), an Information Technology Centre at Manor House, Clapham Common. The Centre will provide work experience and training for young people in microprocessor and computer applications.

We are seeking a person with appropriate management experience and with knowledge of relevant production and marketing techniques to manage the Centre. The initial appointment would be for a period of 15 months with the possibility of further extension.

Application forms and further particulars are available from the Polytechnic Staffing Office. Tel: 01-928 8989 ext. 2355.

Completed application forms to be returned to the Staffing Office no later than October 28th, 1983. (5878)

Computer Operator

To work on our central computer, a UNIVAC 1100/82, where a two-shift system with no night work is in operation.

Starting salary will be approximately £6,260 inclusive of Shift and London Allowance, with progression to approximately £7,750 within three years. Benefits include an active staff club, restaurant and bar.

Applicants must have at least 12 months' experience on a large mainframe.

For further information and application form contact Kevin Pike, Computer Services Division, County Hall, Penrhyn Road, Kingston-upon-Thames, Surrey. Tel. 01-546 1050, Ext. 3479.

SURREY COUNTY COUNCIL

UNIVERSITY OF KENT AT CANTERBURY

RESEARCH FELLOW: MICROSTRIP CIRCUIT MODELLING

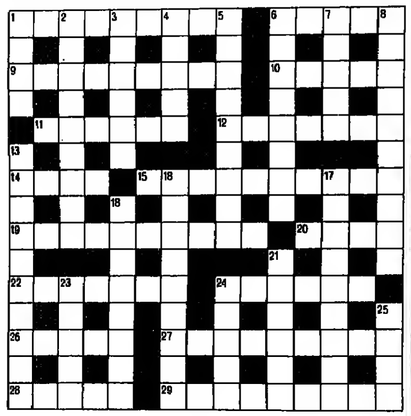
Applications are invited for a three-year Research Fellowship in the Electronics Laboratory. The successful applicant will be engaged on a project supported by the Science and Engineering Research Council and Plessey Research (Caswell) for the development of models for high frequency (20-100 GHz) microstrip circuits. The research programme will be carried out in collaboration with Plessey Research (Caswell) where most of the measurements will be carried out. Salary will be in the range £7,190-£8,530 on the Grade 1A scale. Applications with details of qualifications and experience and the names of two referees should be sent to the **Senior Assistant Registrar, Faculty of Natural Sciences, Chemical Laboratory, The University, Canterbury, Kent CT2 7NH by 21 October, 1983, quoting reference A55/83.** (5859)

CROSSWORD

Prize Crossword No 45

Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry opened. The second and third solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, by first post Friday, October 14. Please use a ballpoint to complete the crossword, and include a telephone number at which you can be reached during the daytime.



Name ..... (Miss, Mrs, Ms, Mr)

Address .....

.....

Telephone .....

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed ..... Date .....

ACROSS

1 Portends damaging of rose-bed (9)
6 Conservative, noisy, a cause of gloom (5)
9 Give up manoeuvring cars, if near a slippery surface (9)
10 Excessively backward in writing, proposes (5)
11 Quiet king has fit of shivering in foreign capital (6)
12,14 To be eternal, or sinking in final disease (4,3,4)
15 Train to defeat on board a fellow who's in form? (6-4)
19 Checks exercise in intervals between work (10)
20,22 People always in the club stretch legs, perhaps (4,7)
24 Coaches – cleaners must catch one (6)
26 A bit of tension in the round's half-way stage (5)
27 Looking again at what's written about a university (9)
28 Tries to experience kiss – is thrown out! (5)
29 Disposition that gives a couple unity (9)

DOWN

1 Swiftly dissipated (4)
2 These judges may have you taped (9)
3,4 Go across to urge a card tournament (6-5)
5 Pays money for missiles abroad (6,3)
6 Underwear in the morning is grabbed by old king (8)
7 Type of switch with negative reversed, no longer available (2-3)
8 Deranged, lost life when holding Southern Command (10)
13 Severely rebukes salesmen around the border also (10)
16 Part of hat a fellow grips in the street, beginning to run (4-5)
17 To make a brute of a male, I sin terribly (9)
18 Hiding in trees you need right garment (8)
21 Grand home – mate has one (6)
23,24 Can let room, surprisingly, for a gambling place (5,5)
25 Encourages making bombs (4)

RULES AND CONDITIONS

1. Each competitor may submit no more than one entry.
2. The competition is open to all readers of Computer Weekly with the exception of the staff of Business Press International Ltd, any printers employed by them or the near relatives of any such staff.
3. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.
4. Winners will receive their prizes during the month following the competition.
5. The decision of the editor on the interpretation of the rules and conditions and on all matters shall be final. No correspondence will be entered into.

ICL Cobol Systems and Programming Opportunities

TOTAL INFORMATION PROCESSING SYSTEMS LIMITED

An established and expanding software house invite you to join their hard-working team of analysts and programmers based in Waltham Cross, Herts, and Witham, Essex, we are currently committed to development of software for ICL DRS 20 and ME 29 computers. The following opportunities are waiting for you:

ANALYST/PROGRAMMER — Salary up to £13,000

Located at our System Centre in Witham, the successful candidate will play a key role in the development and maintenance of a wide range of systems. Minimum of three years' ICL COBOL is required, with knowledge of DRS, ME 29 or 2900 preferable.

PROGRAMMERS — Salary up to £11,500

Positions at both Waltham Cross and Witham offices. To assist in the development and support of systems. Minimum of three years' ICL COBOL required and knowledge of DRS, ME 29 or 2900 preferable.

If you are looking for a challenging position within a friendly working environment, and the opportunity to grow with an expanding company then write or telephone with brief details to Maureen Parker, TIPS LTD., 209b High Street, Waltham Cross EN8 7AY. Telephone: Waltham Cross (0992) 33208.

0896

HEWLETT-PACKARD OPPORTUNITIES

PROJECT LEADERS — **2 LOCATIONS** — **c.£14,500**

We currently have requirements for Project Leaders from clients in West and Central London. Both companies are heavily committed to OF and are involved in development of new systems. Applicants must have a sound DP background including good knowledge of HP3000 systems and software. As well as excellent starting salaries perks include usual large company benefits, some overseas travel and relocation assistance where necessary.

ANALYST/PROGRAMMERS — **HOME COUNTIES** — **to £9,500**

Software house based North of London are seeking Programmers and Analyst/Programmers to work on a variety of new developments on both HP260 and HP3000 systems. Applicants should have a minimum of 18 months' experience of either systems using COBOL or BASIC. Excellent career prospects with the opportunity to work also on micros.

PROGRAMMERS — **LONDON** — **c.£9,000**

International financial concern requires Programmers with a minimum of 12 months' COBOL and a good academic background to join their teams supporting a number of overseas sites. Successful candidates can expect a good deal of travel and ongoing training. Perks include annual bonus, subsidised mortgage and other banking benefits.

PROGRAMMERS — **BERKSHIRE** — **to £10,000**

We are currently recruiting Programmers for a number of HP users based in Berkshire. Applicants should have a minimum of one year's COBOL preferably gained in an HP environment, however training will be provided where necessary. A variety of perks are offered including all usual large company benefits.

ANALYST/PROGRAMMER — **LONDON** — **c.£8,500**

London-based software house specialising in HP260 and 3000 systems seeks an Analyst/Programmer to join their expanding team. Applicants should have a minimum of 18 months' experience of HP3000 COBOL or HP250 BASIC. Excellent perks include the possibility of a company car after qualifying period.

JUNIOR PROGRAMMER — **LONDON** — **c.£8,000**

Two Central London companies require Programmers with around 12 months' HP COBOL or BASIC experience. The sites concerned are involved in a variety of applications and can offer successful candidates further training and good career prospects.

The above is a selection of vacancies at Hewlett-Packard Installations. Whilst some sites insist on HP experience others will consider retraining applicants with good commercial COBOL or BASIC. Please call for details of these and others not listed

Apex Computer Recruitment Ltd.

404 4821

Apex

London Office: 59 Grays Inn Road, London WC1X 8TL. Tel: 01 404 4821.

Brussels Office: Rue Goth de Gomand, 24, Uccle 1180 Brussels Tel: 010 322 377 4193

The International Air Transport Association in Geneva is looking for a

MANAGER DATA CENTRE

The main functions will include:

- administering a data centre consisting of a small technical staff with a PRIME 850 and MDS links to remote processors.
- identifying internal automation opportunities and overseeing all phases of project work either by direct involvement or by assignment to third parties. Automation opportunities will cover all aspects of automation from word processing to data processing.

The ideal candidate would have the following qualifications:

- At least 10 years' practical data processing experience in a business environment encompassing:
  - application development from programmer level advancing through systems analysis to project management,
  - central processing operations, distributed data processing involving network communications, intelligent terminals or stand alone micros,
  - office automation involving selection of appropriate hardware and software, local area networks and incorporation of shared resources.
- Proven ability to organise and administer both projects and people.

Experience with PRIME is not essential.

The salary will be around Swiss Francs 75,000 tax free.

Relocation expenses will be paid.

Applications, including curriculum vitae, should be sent to:
Director, Personnel and Pension Administration
INTERNATIONAL AIR TRANSPORT ASSOCIATION
26 Chemin de Joinville
CH – 1216 Cointrin/Geneva
No later than 14 October, 1983.

IATA

6849

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When you are dealing with the major factors in your life you can only afford the best, and few things are more important than the development of your career. Certainly, that is how the major computer manufacturers feel about their personnel selection and why such companies as CONTROL DATA, COMPUTER TECHNOLOGY, DATA GENERAL, HONEYWELL, PERKIN ELMER, REDIFUSION, SPERRY UNIVAC and many others continually use our organisation for the recruitment of experienced sales people.

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PROJECT CO-ORDINATOR — **CITY** — **£18,000 +Banking Benefits**

A major international bank requires a D.P. professional, aged between 30-40, with a solid IBM background. Experience of project management is essential with the ability to control and run more than one project at once. Applicants are expected to have substantial banking knowledge to include the installation of systems in more than one overseas branch.

ANALYSTS & PROGRAMMERS — **SURREY** — **to £13,000**

Internationally renowned manufacturing company is seeking Analysts and Programmers for large ICL, VME development projects. VME/IDMS/TPMS exposure is particularly relevant. Analysts should have Manufacturing or Accounting systems backgrounds. Programmers will have two or more years' ICL Cobol and there is an urgent need for an experienced VME Systems Programmer.

PROJECT LEADERS — **CITY** — **Neg £14,000**

Our client, a major Software House, requires two Project Leaders to manage teams servicing their international client base. Ideally applicants will have financial, preferably Banking systems backgrounds and already have some supervisory experience. The positions attract an excellent benefits package including good bonus schemes and the early possibility of a company car.

PROGRAMMERS — **ESSEX** — **£8 to £11,000**

Two clients, both rapidly expanding ICL/VME sites, seek further Programmers at various levels to augment their development teams. A minimum requirement of one year's ICL Cobol is necessary with VME experience being especially advantageous. Early promotion to Team Leader or move to Analysis is available for those at more senior levels.

PROGRAMMER/ANALYST — **C. LONDON** — **£10,500**

A Programmer with at least two-and-a-half years' Honeywell Cobol is required for a small London site. All the development work is done with online techniques but they are prepared to train in this area (as well as analysis) so applications are welcomed from Programmers in a batch environment who wish to progress into online/distributed systems.

PROGRAMMER — **LONDON** — **£7,000**

London-based site require a Programmer with one year's commercial RPGII. The hardware is WANG but any hardware will be considered. Applicants should have the standard accounting knowledge (General, Purchase and Sales Ledger) and any manufacturing systems would be of special interest. This site will offer rapid progression into analysis.

Apex Computer Recruitment Ltd.

404 4821

Apex

London Office: 59 Grays Inn Road, London WC1X 8TL. Tel: 01 404 4821.

Brussels Office: Rue Goth de Gomand, 24, Uccle 1180 Brussels. Tel: 010 322 377 4193.

URGENT CONTRACT
ICL SYSTEM 25 DESIGNER
BERKSHIRE
Call Loraine at KPG on 01-948 5922
or Walton on Thames 245552 Evenings

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KPG Computer Support Services Limited
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or 01-891 0782 Evenings

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01-747 0969 (Evenings)

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Cobden House, Park Lane
Richmond, Surrey TW9 2RA

SALES BIT

Quality of Management – 67

How to close a sale at the first call

ONE of the problems of writing a specialist column is that everyone expects you to be a faultless exponent of the art. Whether your subject be nuclear physics, domestic science or, as in my case, selling, it is assumed that any meeting in which you are involved will be a demonstration of superlative skill.

The fact is, it is much easier to pontificate on an action than to carry it out efficiently. No matter how much you study a subject you never get it right all the time – and if you don't practise it the value of such knowledge is severely diluted.

You may, for instance, know all the basic closing techniques, but if it's a long time since you were out in the field, it could be that when the time comes to apply them within the context of your current product in the present marketplace, your efforts are ineffectual.

This time of year is usually a busy time for the recruitment of salespeople, and as several major computer companies have asked us to take a look at their requirements we have been involved in a lot of client visits. So I have been asked to lend a hand.

A few days ago we visited a minicomputer manufacturer and I took the opportunity of getting back into harness by front-ending the call. We have a standard presentation which describes our company, services, benefits etc, and as I designed it myself, albeit a few years ago, I was able to put it over with reasonable fluency.

Within seconds I realised my first mistake. I had assumed that my colleague who had brought the visuals along had checked them out. Well, he hadn't – or if he had, he had not done the job thoroughly for, with great aplomb, I delivered the very first visual upside down. Not an auspicious beginning!

Not my colleague's fault, but mine, for I did not insist on double-checking the material. And I was sufficiently complacent to believe it was not necessary for me to practise beforehand something with which I was already fluent.

As it happened, the hiccup in the presentation was a frustration rather than a problem. The real problem did not occur to me until it was too late to do very much about it.

It is easy to fall into the trap of believing that a sales presentation can be the total purpose of a client visit, as opposed to a major element within a selling call.

Formal presentations can often require so much pre-preparation and demand so much concentration on the part of the presenter, ie the salesman, that it is easy to overlook the need to create an overall structure for the call which above all else includes a final or trial close. Every sales call must have a plan, and a presentation is a sales call.

It is not enough to visit a client merely to tell him who you are and what you do, or even to discover what the potential buyer's requirements are. The minimum objective of any call is to come away with commitment in terms of subsequent action to be taken; but even that is a poor alternative to closing the sale.

Now that may appear rather obvious. What is not so obvious, because many salespeople fail even to consider the question, is whether the business can possibly be closed within each call that is made.

"Close early and often" it says in all the selling books. What that means is be prepared to close the deal at any time in any call, even if your typical selling-cycle is measured in years. The way to do that is to create a structured plan of action for every sales call. That creates a natural point at which the selling close will be applied, bearing in mind that the right opportunity could come along at any unpredictable moment.

My loose strategy was to tell them about us, get them to tell us about them, then ask for the order. What happened in reality was that the presentation created a lot of interest and generated a lot of questions. This was followed by a thorough description of the client's products, markets and recruitment needs which was extremely interesting and attractive.

This was immediately followed with the news that the senior managers involved were already 15 minutes overdue for an important meeting and they had to go despite their extreme interest in everything we had to say. This was in turn followed by one of the classic confirmations of selling failure: "Let us have a quotation"!

We hadn't lost the business in this particular case – far from it; but with intelligent planning we could have closed the business there and then. All the facts were known, so what was the point of going away and saying the same thing in writing?

Now there was time for competition to get into the act, time for reconsideration, time for political intervention, time for receiving an offer they couldn't possibly refuse. In other words the odds of getting the business from this excellent company had dropped from what could be considered a 95% chance to perhaps 60%, simply because of inadequate selling strategy.

What did I do wrong? For a start I didn't agree on the amount of time the client had available and planned the call accordingly. I didn't establish (until it was too late to be of immediate value) whether the person with the authority to make a decision was included among the client's representatives. Neither did I establish that a budget was already approved for the expenditure involved.

As we had run out of time, despite the fact that I had my company's authority to negotiate terms, we could not establish and therefore agree the costs involved.

And how can one close a sale when the terms of business have not been discussed? All of this could have been avoided if I had been selling to a predetermined pattern with positive objectives determined within an agreed timescale.

What is more, I now have to provide a quotation, a proposal, that is completely unnecessary.

Just think of it from the buyer's point of view. If you are too nice to say no, what easier way is there of getting rid of the salesman than saying: "That's very interesting. Why don't you send me a proposal"?

For my own part I hope I have learned the lesson of my mistake. I also hope we still have a chance of getting the business!

Alan Williams

PUZZLE ANSWER

THE most efficient way to construct a rectangular open-topped tank is to make it with a square base, and twice as wide as it is deep. This 2:2:1 ratio of the three dimensions keeps the amount of material needed to a minimum.